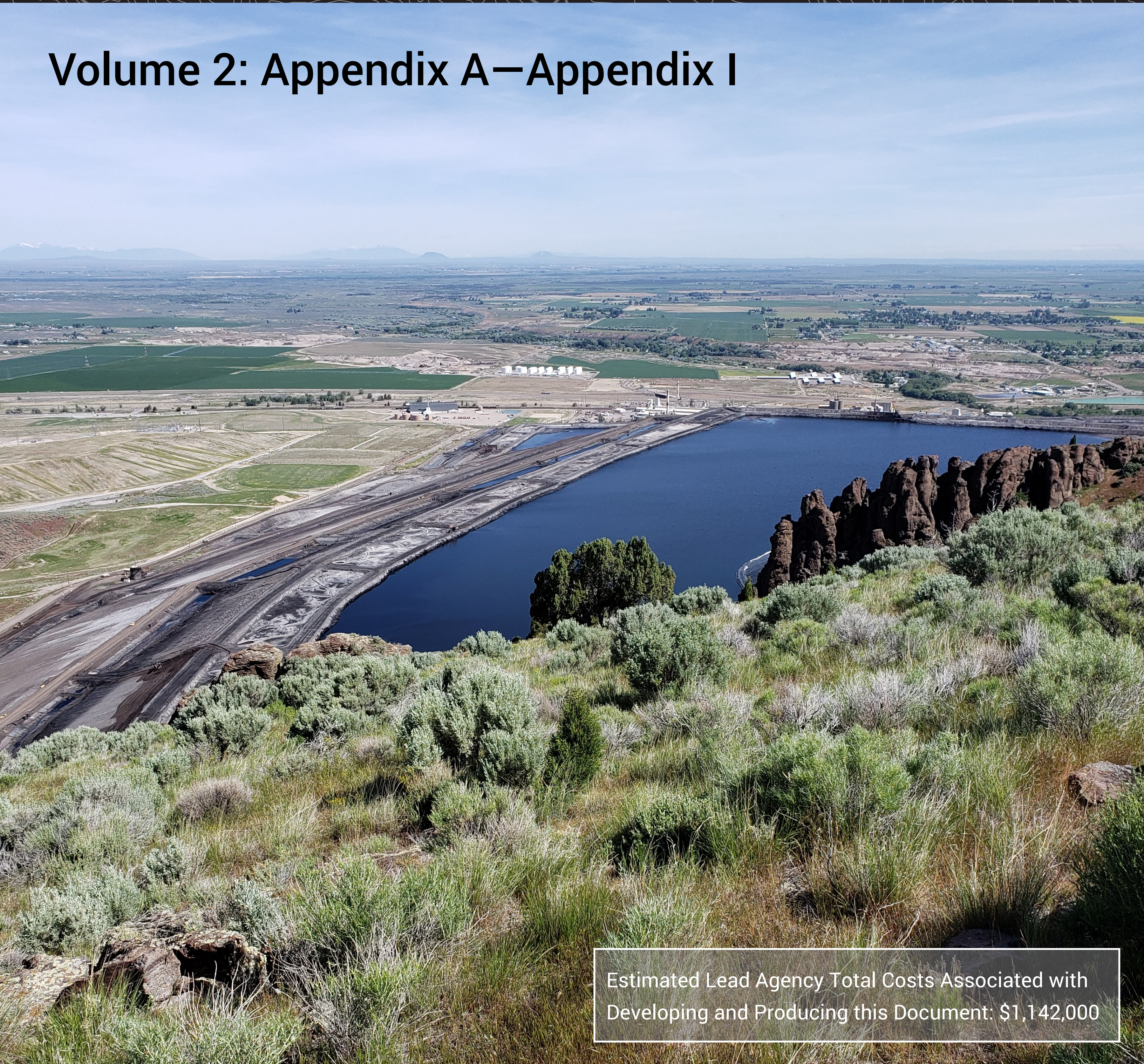
U.S. Department of the Interior
Bureau of Land Management

Blackrock Land Exchange Final Environmental Impact Statement

Pocatello Field Office

Volume 2: Appendix A—Appendix I



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BLM MISSION

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

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Appendix B

Glossary

Acre-foot: A unit of volume equal to the volume of 1 acre of surface area at a depth of 1 foot.

Animal Unit Month (AUM): The amount of forage needed to sustain one cow or its equivalent for 1 month.

Allotment: A land area where one or more operators graze their livestock. The allotment generally consists of public land but may include parcels of private and State-owned lands. The number of livestock and season of use are stipulated for each allotment by the landowner.

Average Annual Daily Vehicle Trips: Estimates the mean traffic volume across all days for a year for a given location along a roadway.

Best Management Practices (BMPs): Methods that have been determined to be the most effective and practical means of preventing or reducing impacts on a resource.

Cooling Pond: Cooling ponds are used for heat transfer of the cooling circuit water rather than cooling towers. The hot water would be pumped to the ponds, allowed to cool, and then returned to the cooling water circuit to be used again in a closed loop system. Cooling ponds are the most appropriate method for reducing fluoride emissions, while also continuing to meet operational requirements at the Don Plant facility.

Cooling Tower: The cooling towers at the Don Plant cascade contact cooling water over packing to increase air contact and transfer heat load to the surrounding air through sensible heat transfer or evaporation. The cooling towers are considered a source of fluoride emissions.

Cultural Resources: Those fragile and nonrenewable remains of human activity, occupation, or endeavor reflected in district, sites, structures, building, objects, artifacts, ruins, works of art, architecture, and natural features that were of importance in past human events. These resources consist of (1) physical remains, (2) areas where significant human events occurred, even though evidence of the event no longer remains, and (3) the environment immediately surrounding the actual resource.

Cumulative Effects/Impacts: The effect or impact on the resource that results from incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

Direct Effect: Direct effects "are caused by the action and occur at the same time and place" (40 Code of Federal Regulations [CFR] 1508.8(a)). For purposes of this Environmental Impact Statement (EIS), direct effects are the changes in land ownership, regulatory requirements, and management that would occur as a result of the proposed land exchange. This includes management of the acquired non-Federal lands in a manner consistent with adjacent or nearby public lands as specified in the *Record of Decision and Pocatello Field Office Approved Resource Management Plan* (BLM 2012).

Disposal: Transferring of land out of Federal ownership by various methods such as exchange, sale, Recreation and Public Purposes Act, and/or State indemnity selection.

Encumbrances: Encumbrances include liens, deed restrictions, easements, encroachments, and licenses.

Environmental Impact Statement (EIS): A detailed statement required by the National Environmental Policy Act (NEPA) when an agency proposes a major Federal action significantly affecting the quality of the human environment. There is usually a Draft EIS followed by a Final EIS.

Eastern Michaud Flats (EMF) Superfund Site: The 2,530-acre EMF Superfund site is approximately 2.5 miles northwest of the city of Pocatello in Power and Bannock Counties in southeastern Idaho. Portions of the site are within the boundaries of the Fort Hall Indian Reservation. The site is divided into three

operable units (OUs): OU1 (FMC OU), OU2 (Simplot OU), and OU3 (Off-Plant OU). The FMC and J.R. Simplot Company (Simplot) OUs include two adjacent phosphate-ore processing facilities: the former FMC Elemental Phosphorous Plant and the active Simplot Don Plant. The site encompasses the areal extent of contamination at and from both plants, including the Off-Plant OU for portions beyond the FMC and Simplot plant boundaries.

Eastern Michaud Flats Off-Plant Operable Unit (OU): The Off-Plant OU of the EMF site is not specifically mapped. In general, the Off-Plant OU is defined as the areal extent of all land, including federal, private, and tribal land, surrounding the FMC and Simplot plants with contamination originating from the plants.

Federal Lands: The publicly owned lands that have been selected by the project proponent for acquisition in a land exchange.

Finding of No Significant Impact (FONSI): A FONSI is issued when environmental analysis and interagency review during the Environmental Assessment process find a project to have no significant impacts on the quality of the environment.

Forage: Vegetation used for food by wildlife, particularly big game wildlife and domestic livestock.

Geographic Information Systems (GIS): A system that presents spatial geographic data.

Greenhouse Gas (GHG): An atmospheric gas such as water vapor, carbon dioxide, methane, and ozone that absorbs and emits radiation.

Gypsum Stack: A disposal area for gypsum and process water, once the gypsum has been separated from the phosphoric acid.

Indirect Effect: Indirect effects "*are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the patterns of land use, populations density, or growth rate, and related effects on water and air and other natural systems, including ecosystems*" (40 CFR 1508.8(b)). For purposes of this EIS, making the Federal and non-Federal lands available for reasonably foreseeable actions that would otherwise not occur is considered an indirect effect of the proposed land exchange.

Leachate: A contaminated liquid created from water percolating through a waste disposal site, accumulating contaminants, and moving into subsurface areas (such as the movement of water through the gypsum stack liner).

Memorandum of Agreement (MOA): A written document describing a cooperative relationship between two parties wishing to work together on a project or to meet an agreed-upon objective. An MOA serves as a legal document and describes the terms and details of the partnership agreement.

Mitigate, Mitigation: Mitigation includes (a) avoiding the impact altogether by not taking a certain action or parts of an action, (b) minimizing impacts by limiting the degree or magnitude of the action and its implementation, (c) rectifying the impact by repairing, rehabilitating, or restoring the affected environment, (d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action, and (e) compensating for the impact by replacing or providing substitute resources or environments.

National Ambient Air Quality Standards (NAAQS): The Clean Air Act requires the U.S. Environmental Protection Agency (EPA) to set NAAQS for pollutants that are considered harmful to the public and environment. These pollutants come from numerous and diverse sources. The EPA has set NAAQS for six principal pollutants, which are called "criteria" pollutants:

- Carbon monoxide
- Lead
- Nitrogen oxides
- Particulate matter
  - PM_{10} (any particulate matter with a diameter less than or equal to 10 microns)
  - $PM_{2.5}$ (any particulate matter with a diameter less than or equal to 2.5 microns. Also called "fine particulate matter")
- Ozone
- Sulfur dioxide

The Clean Air Act established two types of NAAQS.

1. **Primary standards:** set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly.
2. **Secondary standards:** set limits to protect public welfare, including protection against visibility impairment, damage to animals, crops, vegetation, and buildings.

National Environmental Policy Act (NEPA): Legislative act passed in 1969 as the national charter for analysis of impacts of Federal actions upon the quality of the human environment. NEPA establishes policy, sets goals, and provides means for carrying out the policy. Regulations from 40 CFR 1500–1508 implement the act.

National Register of Historic Places (NRHP): A list, kept by the Secretary of the Interior, of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, and culture.

Non-Federal Lands: The privately owned lands that are being offered in exchange for public lands in a land exchange.

Noxious Weeds: A weed that is considered to be harmful to the environment or animals, especially one that may be the subject of regulations governing attempts to control it.

Off-reservation Tribal Treaty Rights: Off-reservation treaty rights that may be reserved on present-day national forests and Bureau of Land Management (BLM) land include grazing rights, hunting and fishing rights, gathering rights and interests, water rights, and subsistence rights.

Parcel: A defined piece of land or real estate, usually resulting from the division of a larger area of land.

Patent: A document conveying title to land from the U.S. government to private ownership.

Phosphogypsum: A byproduct of the chemical reaction that produces phosphoric acid. Phosphogypsum is mechanically separated from the phosphoric acid at the Don Plant and then mixed with process water for transport to a storage area located south and southeast of the Don Plant site known as the gypsum stack (or phosphogypsum stack).

Record of Decision: A public document that reflects a Federal agency's final decision on a proposed project, rationale behind that decision, and commitments to monitoring and mitigation.

Resource Management Plan (RMP): A planning document developed by the BLM that provides guidelines and direction for making land tenure decisions for short-term and long-term management of public lands and resources within a district.

Right-of-way (ROW): A legal right to use, occupy, or access land or water areas for specified purposes.

Riparian: Plant communities occurring in association with any spring, lake, river, stream, creek, wash, arroyo, or other body of water or channel having banks and bed through which waters flow at least periodically. These habitats are generally characterized or distinguished by a difference in plant species composition or an increase in the size and/or density of vegetation as compared to upland areas.

Scope: Scope consists of the range of actions, alternatives, and impacts to be considered in the EIS.

Scoping: Procedures by which agencies solicit input from the public, other agencies, and Indian tribes to determine the extent of analysis necessary for a proposed action (i.e., the range of actions, alternatives, and impacts to be addressed; identification of significant issues related to a proposed action; and the depth of environmental analysis, data, and task assignments needed).

Sensitive Species: Those species designated by a BLM State Director, in cooperation with a State agency responsible for managing the species, as sensitive. Sensitive species are those species (1) under status review by the U.S. Fish and Wildlife Service/National Marine Fisheries Service; (2) whose numbers are declining so rapidly that Federal listing may become necessary; (3) with typically small and widely dispersed populations; or (4) inhabiting ecological refugia or other specialized or unique habitats.

Slurry: A mixture of phosphate ore concentrate and water.

Special Status Species: A grouping of wildlife species that includes proposed species, threatened and endangered species, candidate species, State-listed species, and sensitive species.

Stormwater Pollution Prevention Plan (SWPPP): A plan that is used to reduce pollutants entering waterbodies during storm (i.e., rain) events. Includes sources of pollution and control measures.

Superfund Site: A Superfund site is any land in the United States that has been contaminated by hazardous waste and identified by the EPA as a candidate for cleanup because it poses a risk to human health and/or the environment.

Tailings: The remains of milled ore that are regarded as too poor to be treated further.

Visual Resource Management (VRM) Classes: Classification containing specific objectives for maintaining or enhancing visual resources, including the kinds of structures and modifications acceptable to meet established visual goals.

Voluntary Mitigation Parcel A: 159 acres of Simplot-owned land in the Blackrock Canyon area that would be acquired by the BLM under Alternatives A and B.

Voluntary Donation Parcel B: 950 acres of Simplot-owned land that, under Alternatives A and B, Simplot would offer for donation to the Secretary of the Interior Bureau of Indian Affairs for the benefit of the Shoshone-Bannock Tribes or to the Shoshone-Bannock Tribes directly, provided the land exchange is approved and any administrative or judicial appeals have been resolved.

Watershed: The geographic region from which water drains into a particular stream, river, or body of water. A watershed includes hills, lowlands, and the body of water into which the land drains. Watershed boundaries are defined by the ridges or divides separating them.

Wetlands: Areas inundated by surface water or groundwater with a frequency sufficient to support vegetation or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction.

Winter Range: Important habitat and forage area for big game, as it provides valuable food and thermal cover that allow ungulate species (specifically mule deer for this analysis) to conserve energy during severe winter weather conditions.

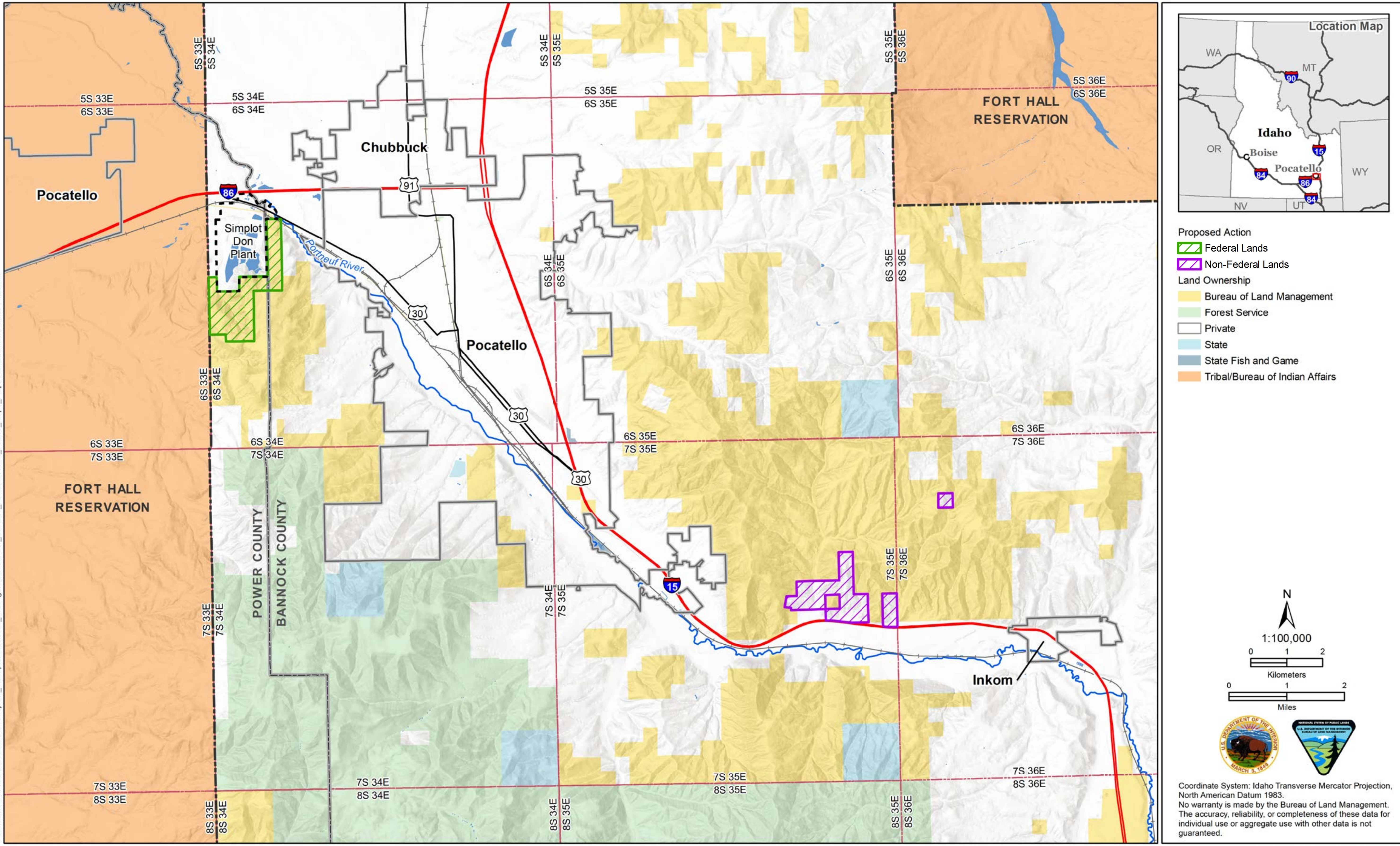
Blackrock Land Exchange

Final Environmental Impact Statement

Appendix C

Maps

Map List



Map 1: Proposed Action

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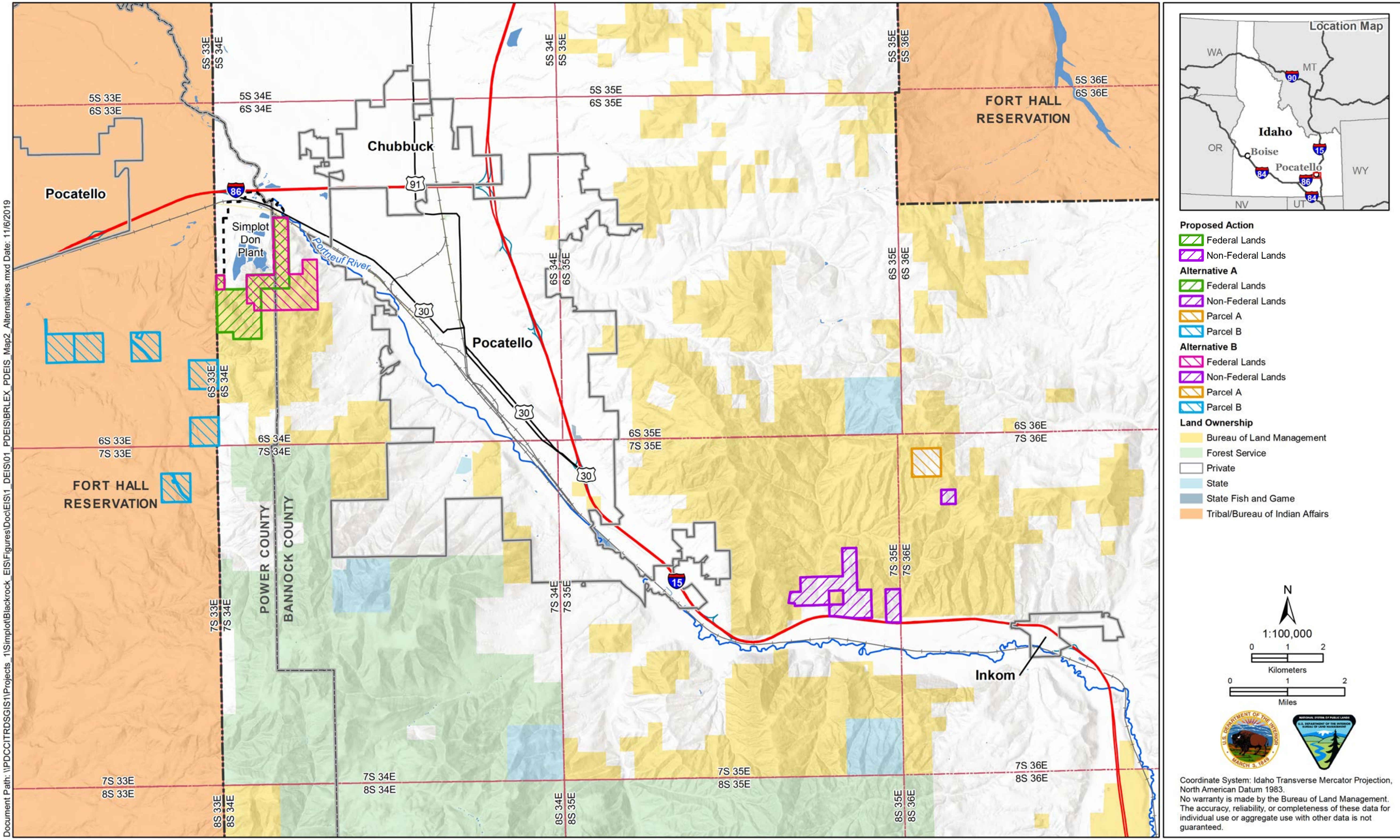
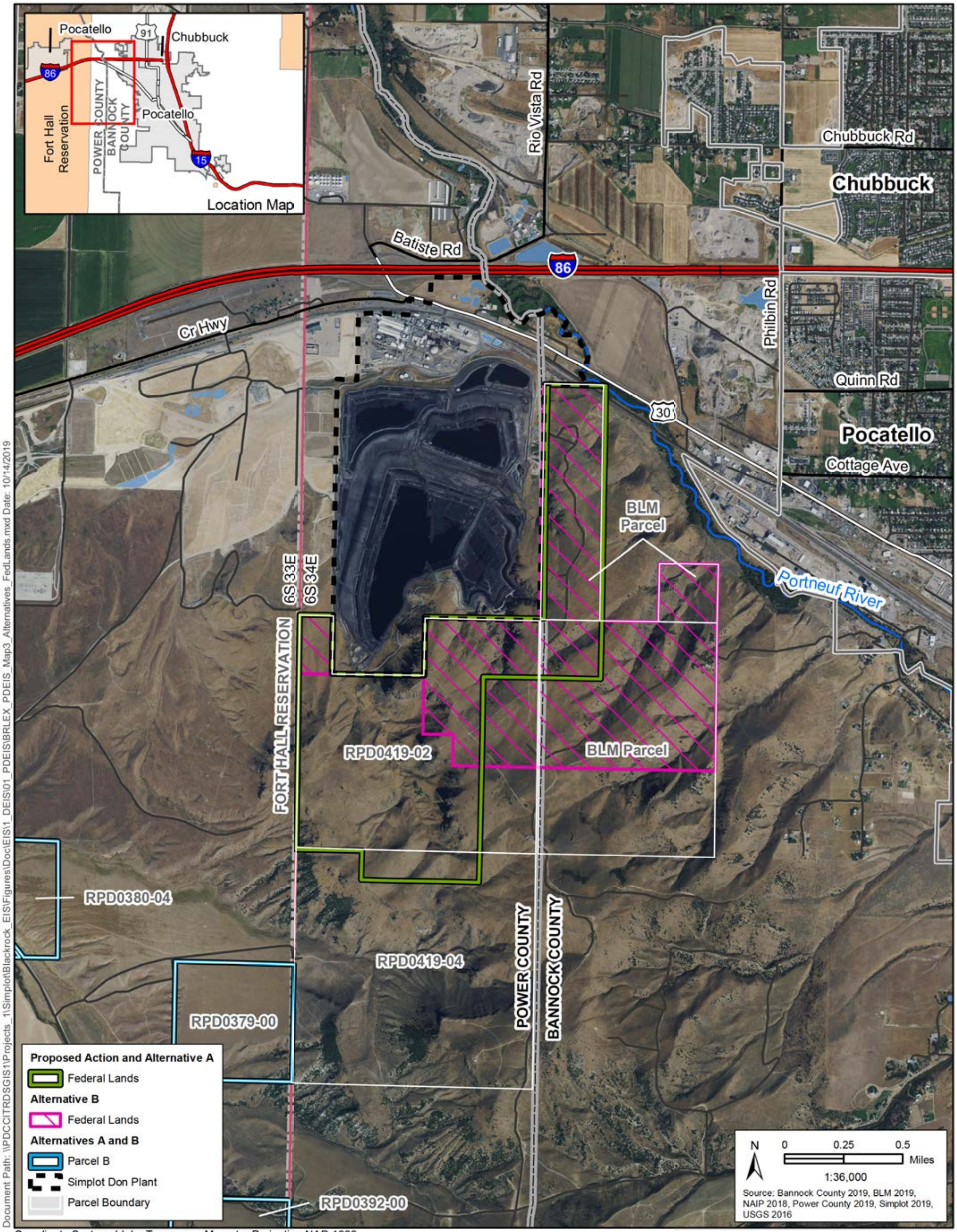
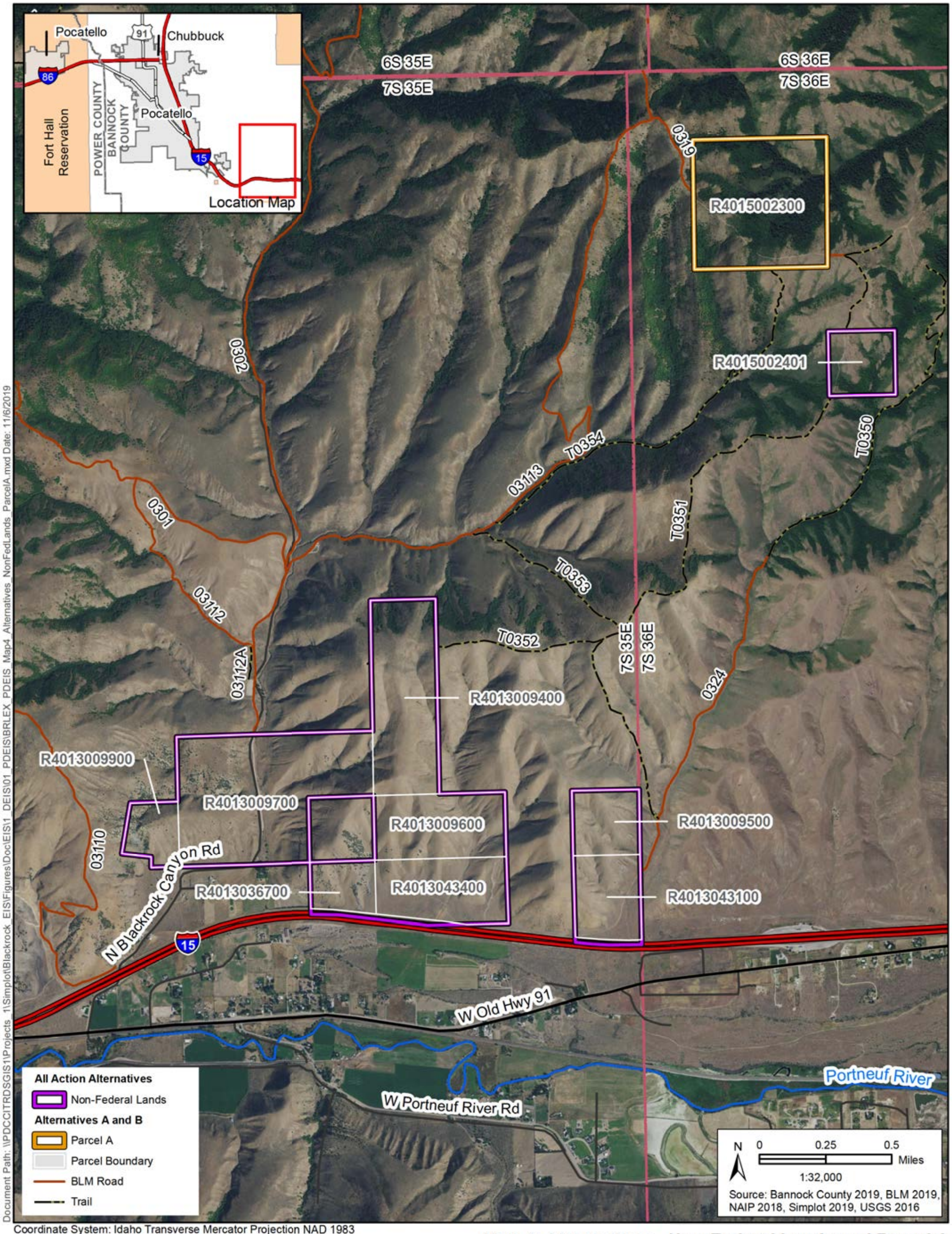


Map 2: Alternatives - Overview



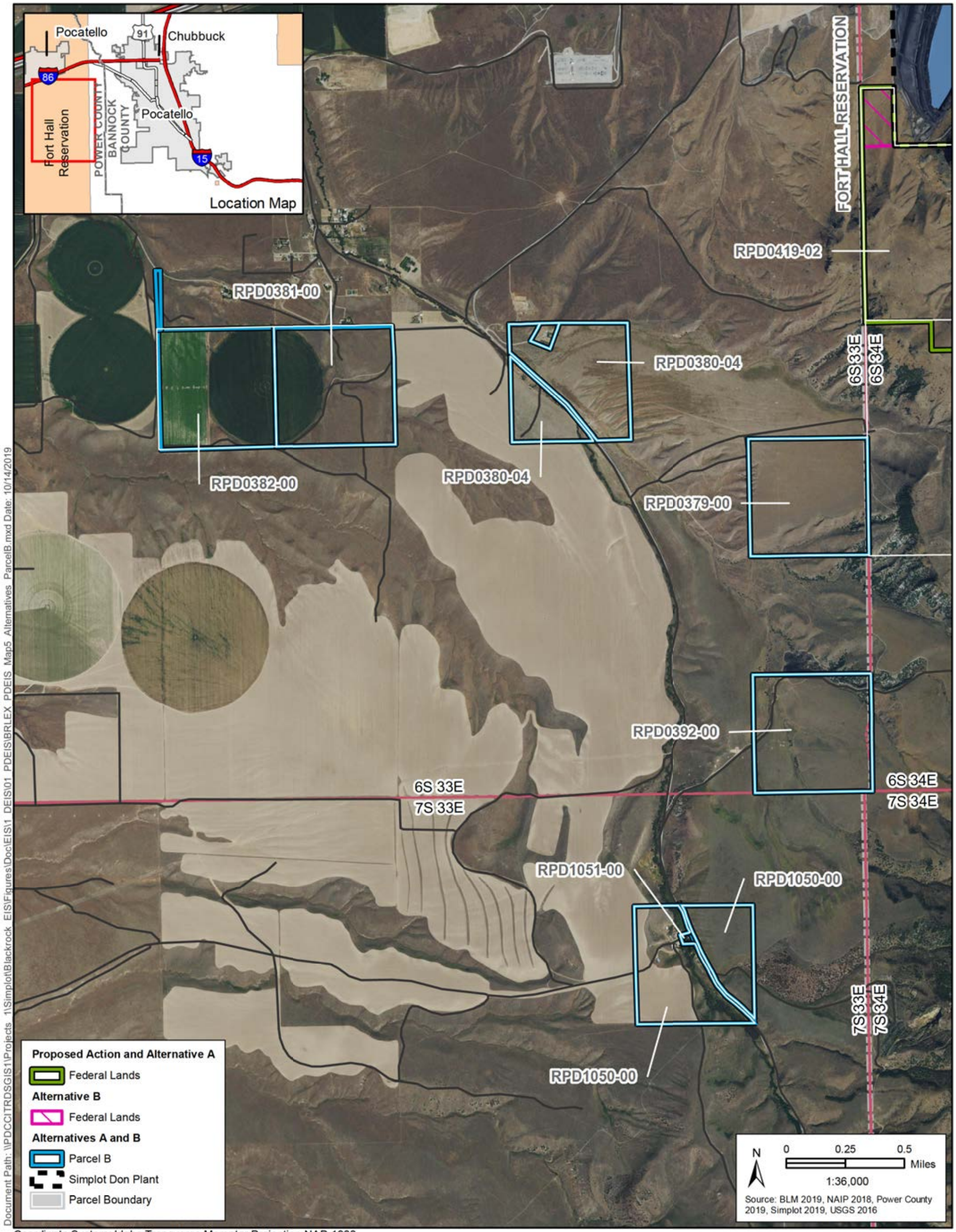
Coordinate System: Idaho Transverse Mercator Projection NAD 1983
No warranty is made by the Bureau of Land Management. The accuracy, reliability, or completeness of these data for individual use or aggregate use with other data is not guaranteed.

Map 3: Alternatives - Federal Lands



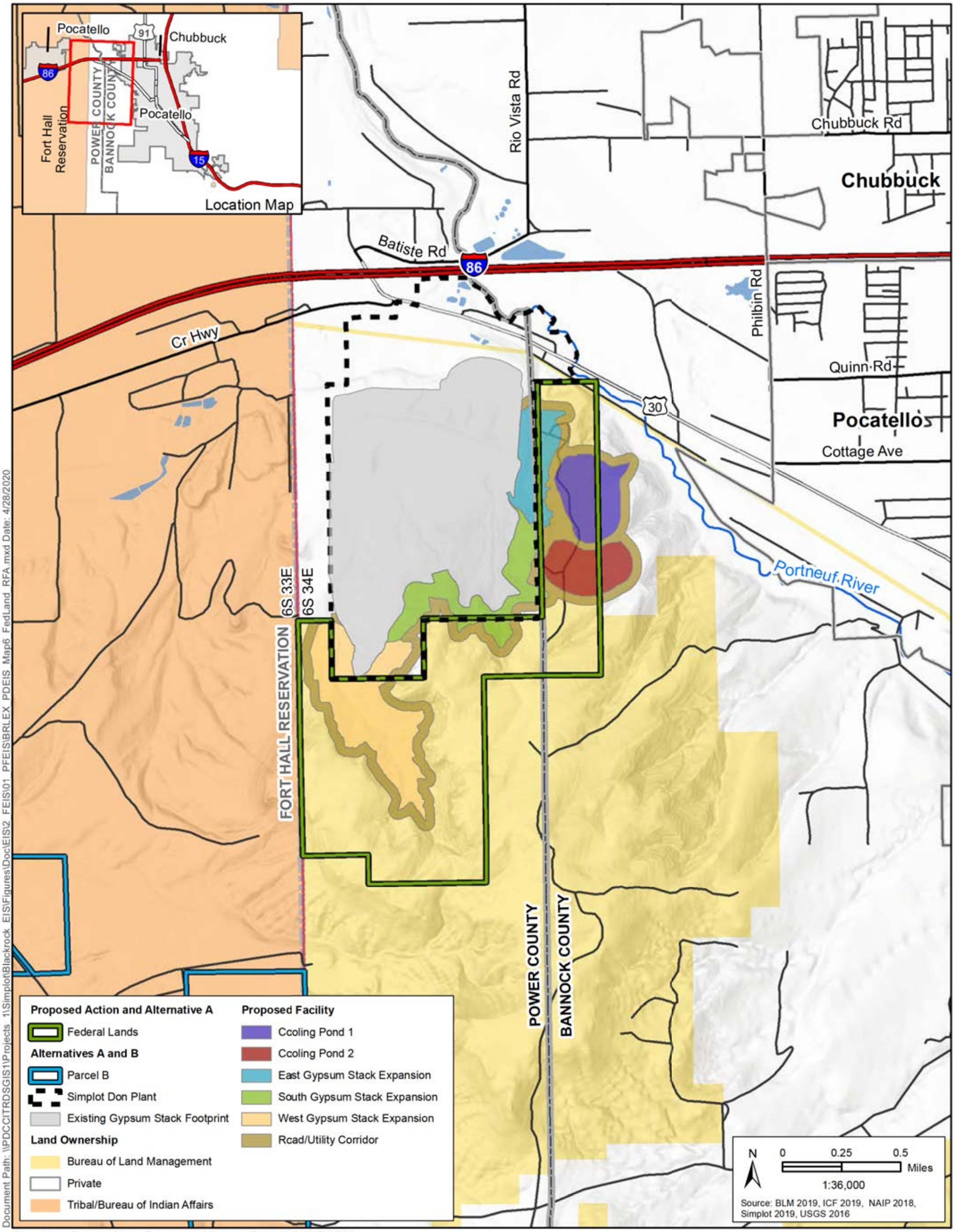
Coordinate System: Idaho Transverse Mercator Projection NAD 1983
No warranty is made by the Bureau of Land Management. The accuracy, reliability, or completeness of these data for individual use or aggregate use with other data is not guaranteed.

Map 4: Alternatives - Non-Federal Lands and Parcel A



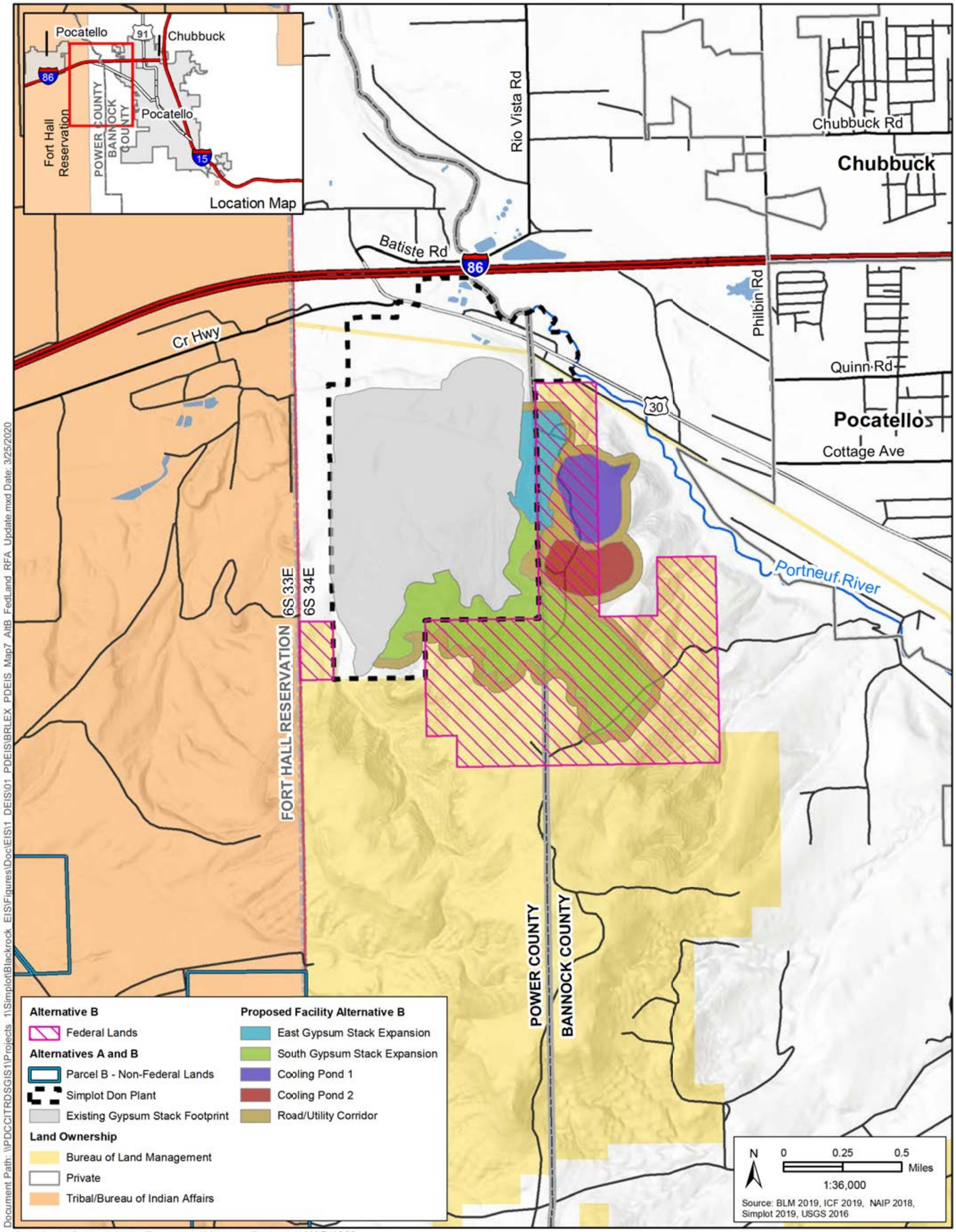
Coordinate System: Idaho Transverse Mercator Projection NAD 1983
No warranty is made by the Bureau of Land Management. The accuracy, reliability, or completeness of these data for individual use or aggregate use with other data is not guaranteed.

Map 5: Alternatives - Parcel B



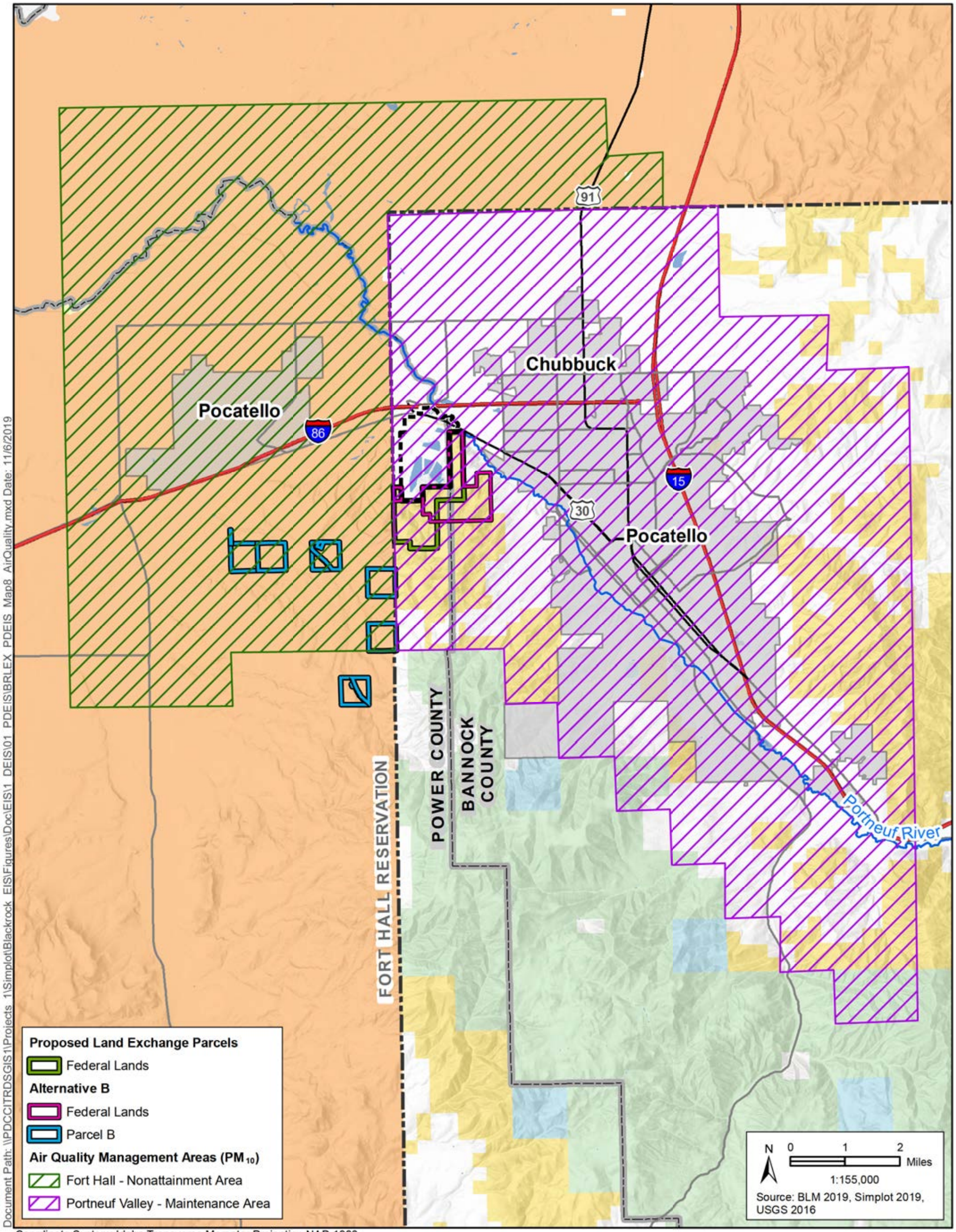
Coordinate System: Idaho Transverse Mercator Projection NAD 1983
No warranty is made by the Bureau of Land Management. The accuracy, reliability, or completeness of these data for individual use or aggregate use with other data is not guaranteed.

Map 6: Alternatives - Reasonably Foreseeable Actions on Federal Lands (Proposed Action and Alternative A)



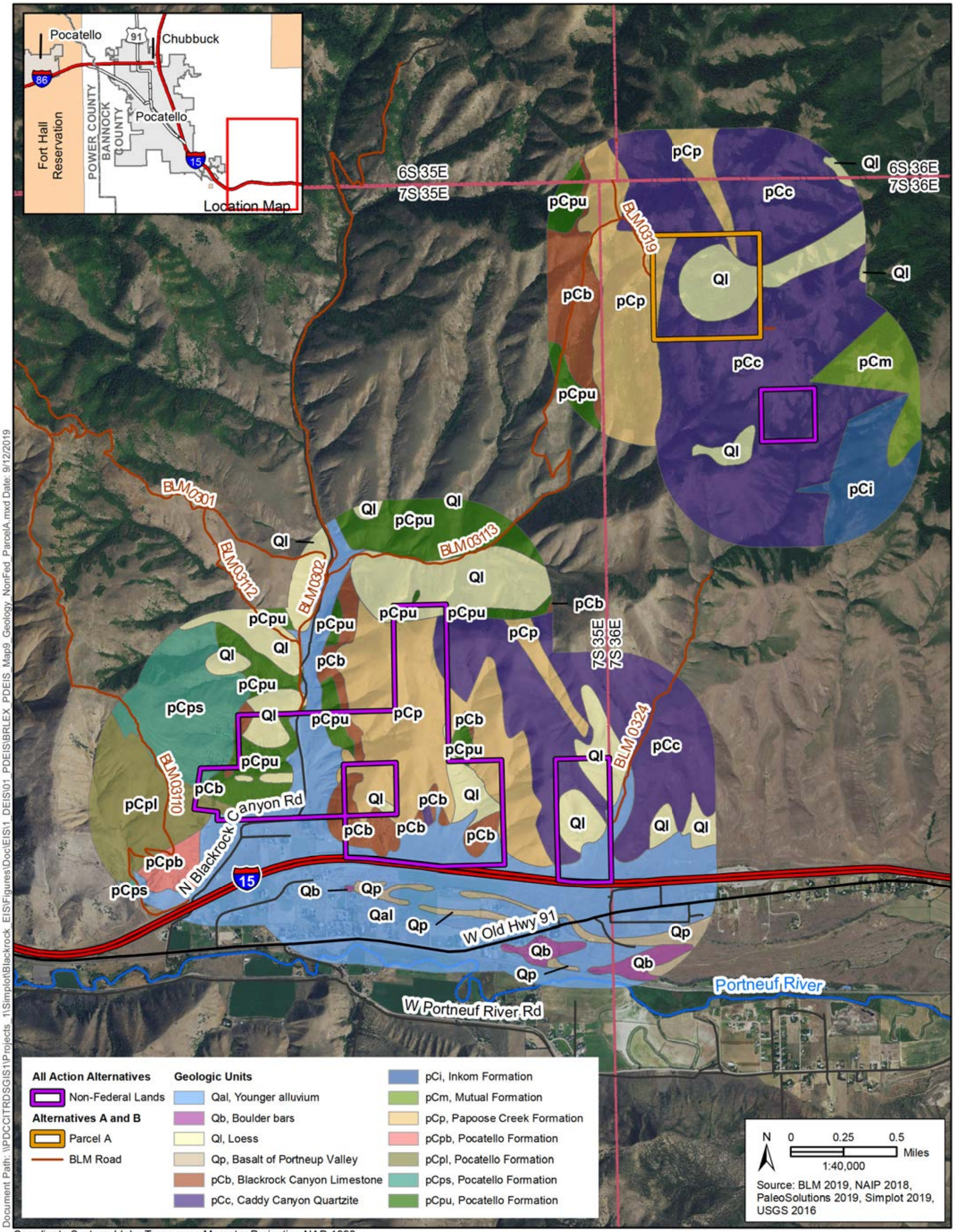
Coordinate System: Idaho Transverse Mercator Projection NAD 1983
No warranty is made by the Bureau of Land Management. The accuracy, reliability, or completeness of these data for individual use or aggregate use with other data is not guaranteed.

Map 7: Alternatives - Reasonably Foreseeable Actions on Federal Lands (Alternative B)



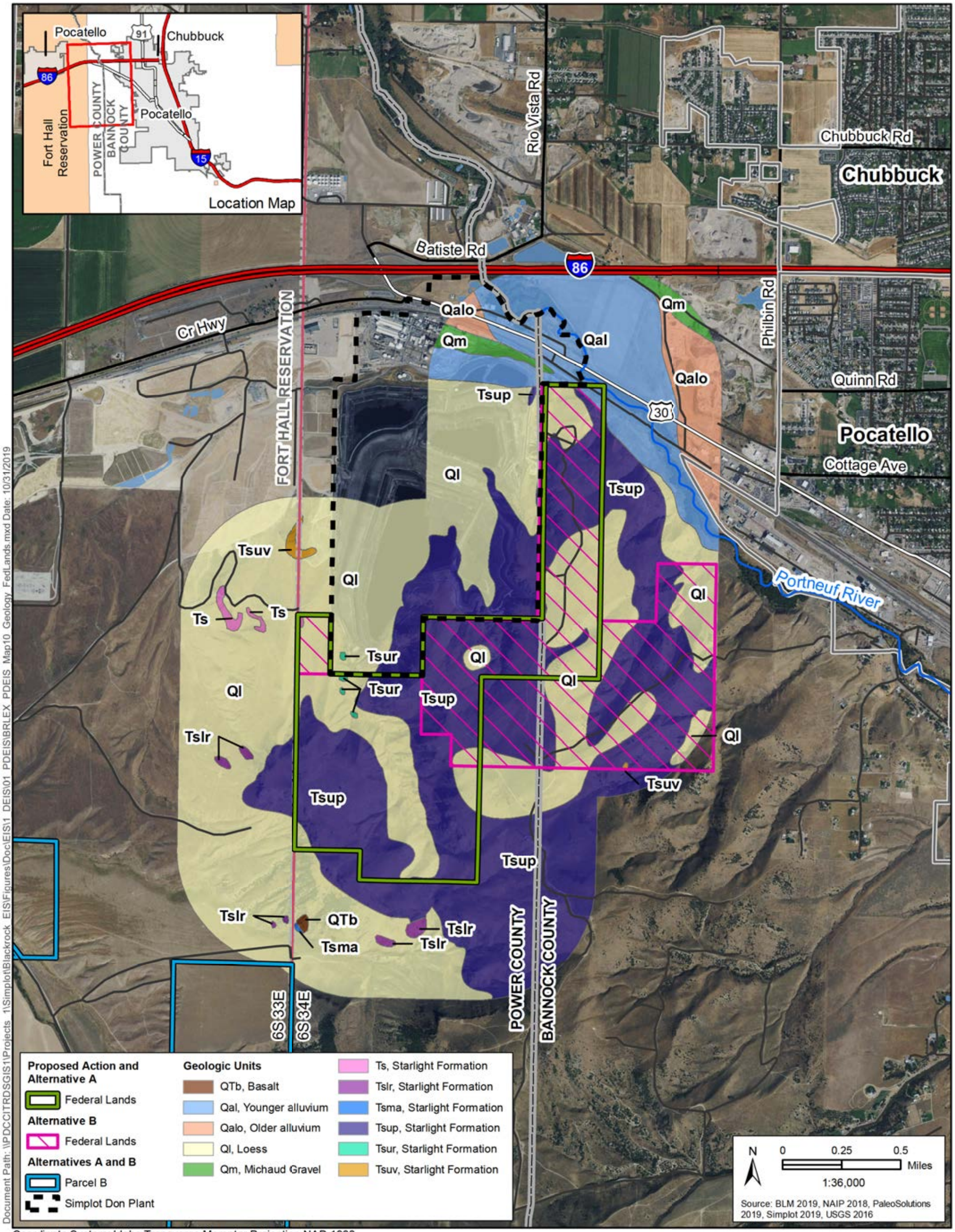
Coordinate System: Idaho Transverse Mercator Projection NAD 1983
No warranty is made by the Bureau of Land Management. The accuracy, reliability, or completeness of these data for individual use or aggregate use with other data is not guaranteed.

Map 8: Air Quality - Air Quality Management Areas



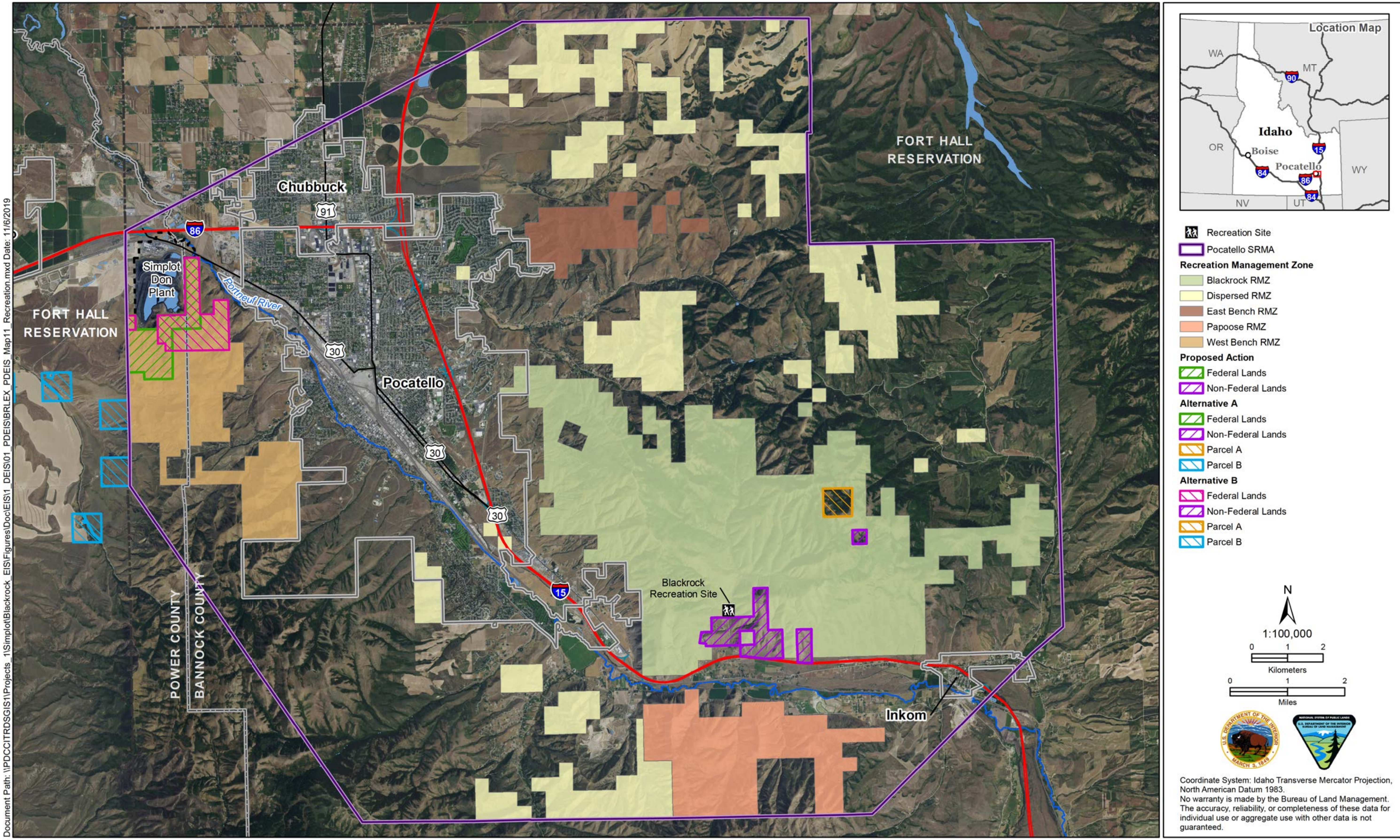
Coordinate System: Idaho Transverse Mercator Projection NAD 1983
No warranty is made by the Bureau of Land Management. The accuracy, reliability, or completeness of these data for individual use or aggregate use with other data is not guaranteed.

Map 9: Geologic Units - Non-Federal Lands and Parcel A



Coordinate System: Idaho Transverse Mercator Projection NAD 1983
No warranty is made by the Bureau of Land Management. The accuracy, reliability, or completeness of these data for individual use or aggregate use with other data is not guaranteed.

Map 10: Geologic Units - Federal Lands



Map 11: Recreation - Recreation Management Areas

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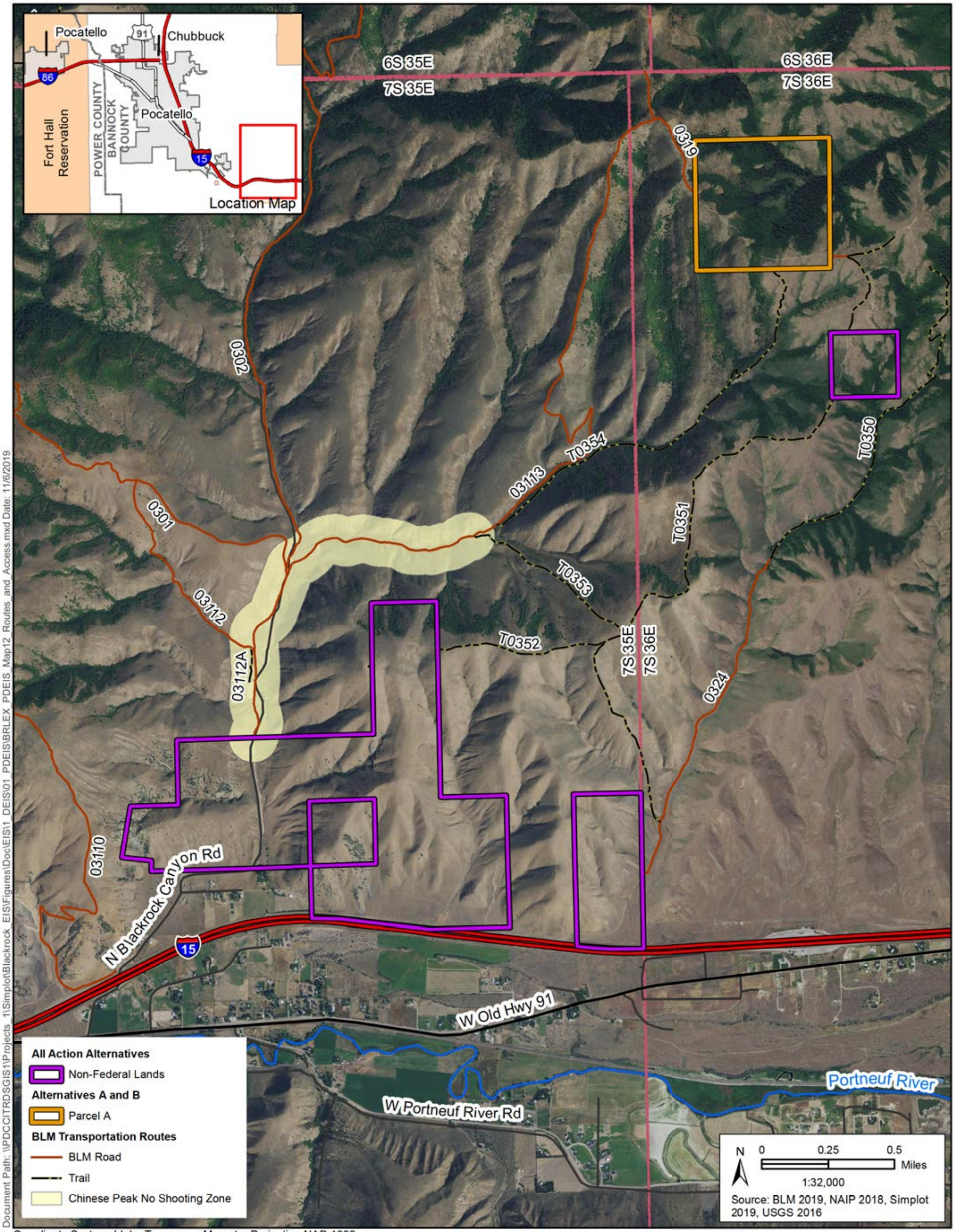

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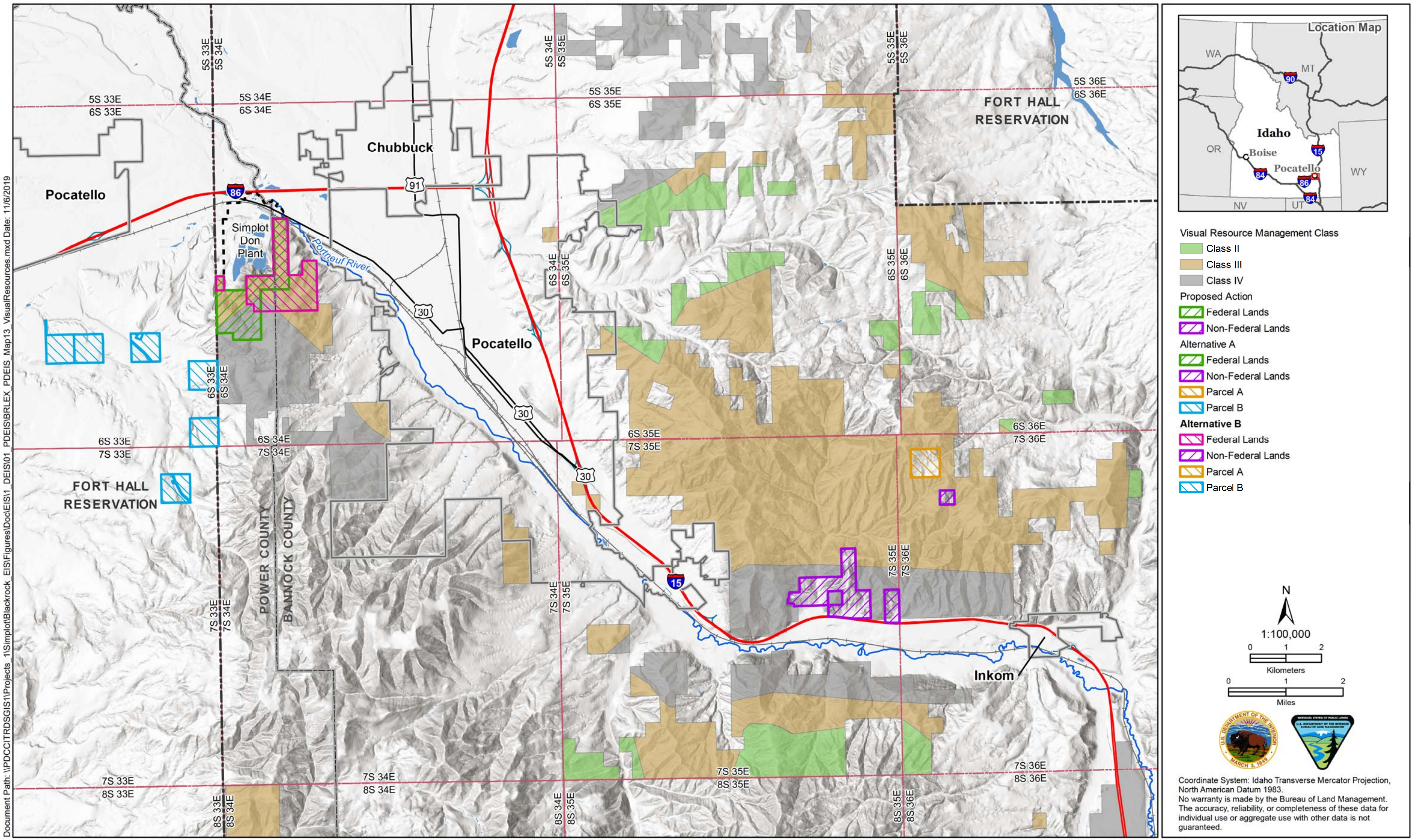
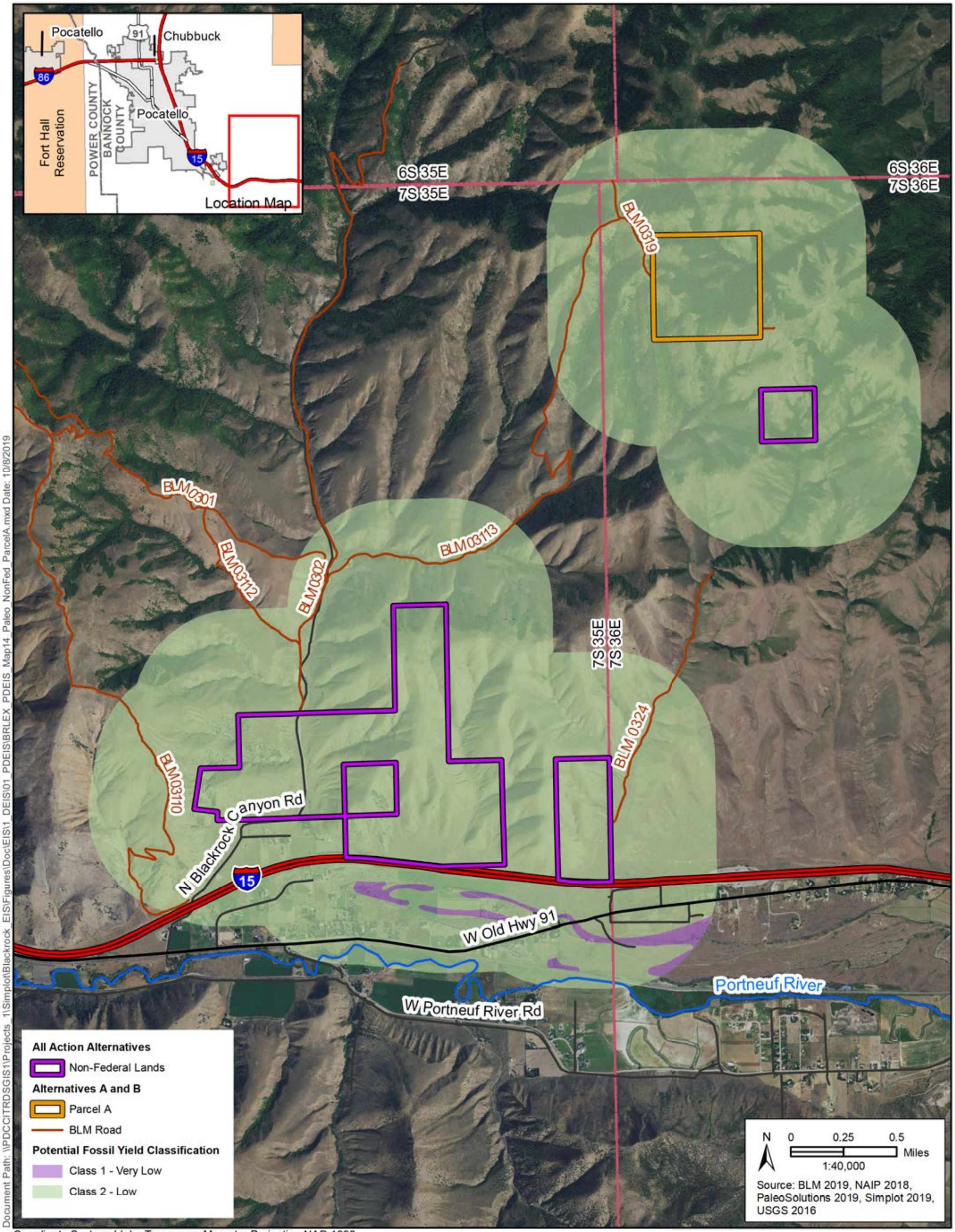
Coordinate System: Idaho Transverse Mercator Projection NAD 1983
No warranty is made by the Bureau of Land Management. The accuracy, reliability, or completeness of these data for individual use or aggregate use with other data is not guaranteed.

Map 12: Routes and Access – Non-Federal lands and Parcel A

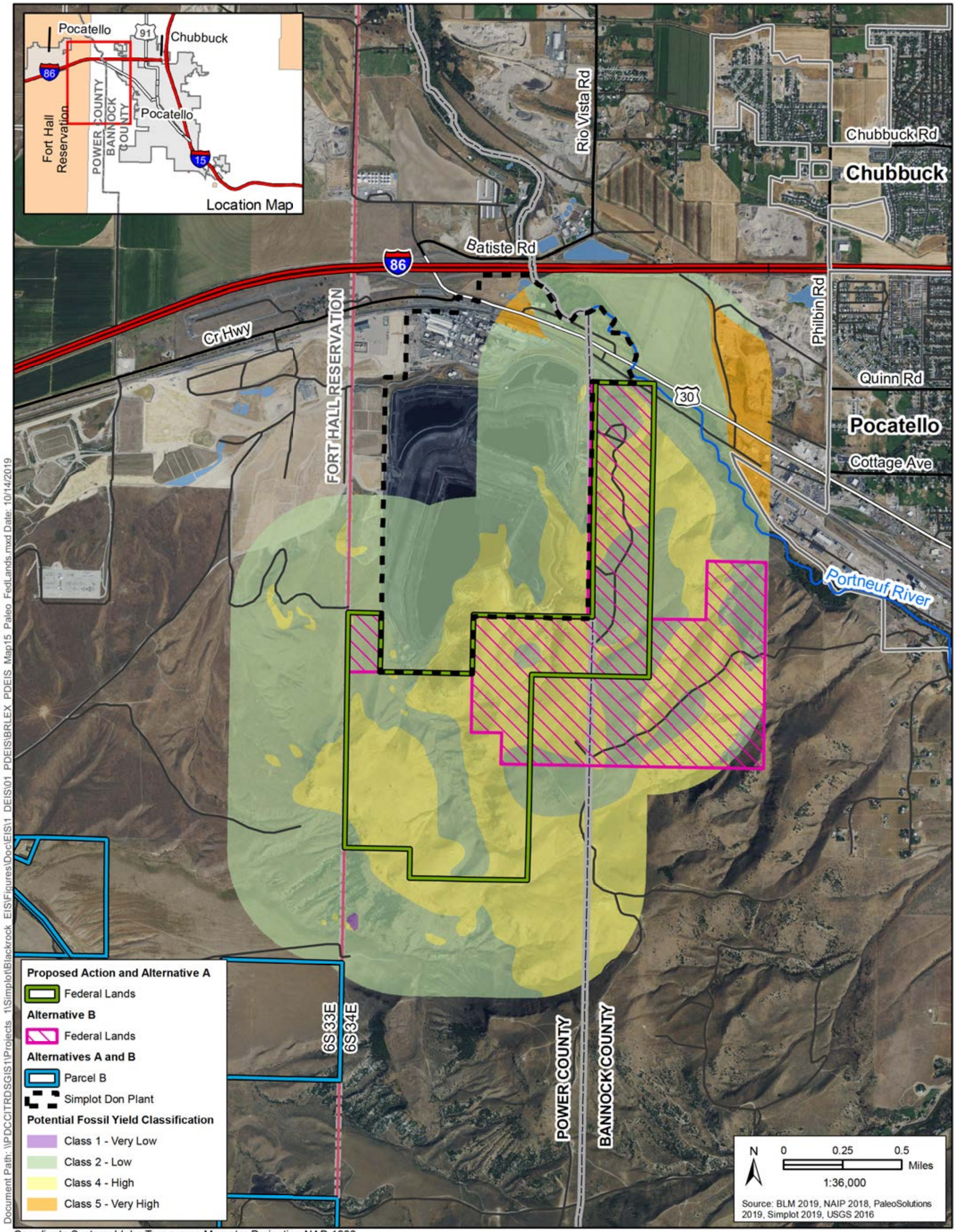


Map 13: Visual Resource - Visual Resource Management Classes



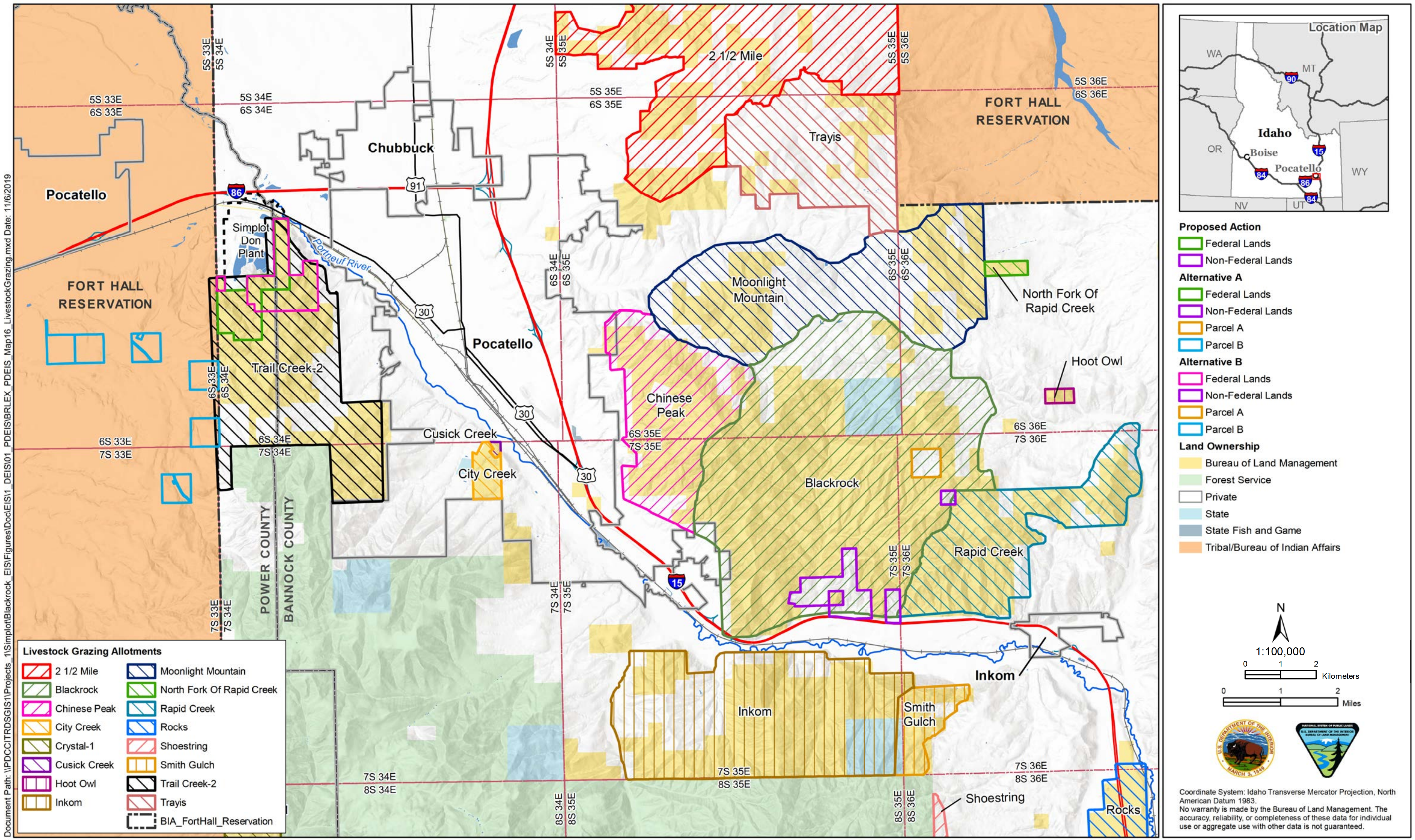
Coordinate System: Idaho Transverse Mercator Projection NAD 1983
No warranty is made by the Bureau of Land Management. The accuracy, reliability, or completeness of these data for individual use or aggregate use with other data is not guaranteed.

Map 14: Paleontology - Potential Fossil Yield Classification Non-Federal Lands and Parcel A

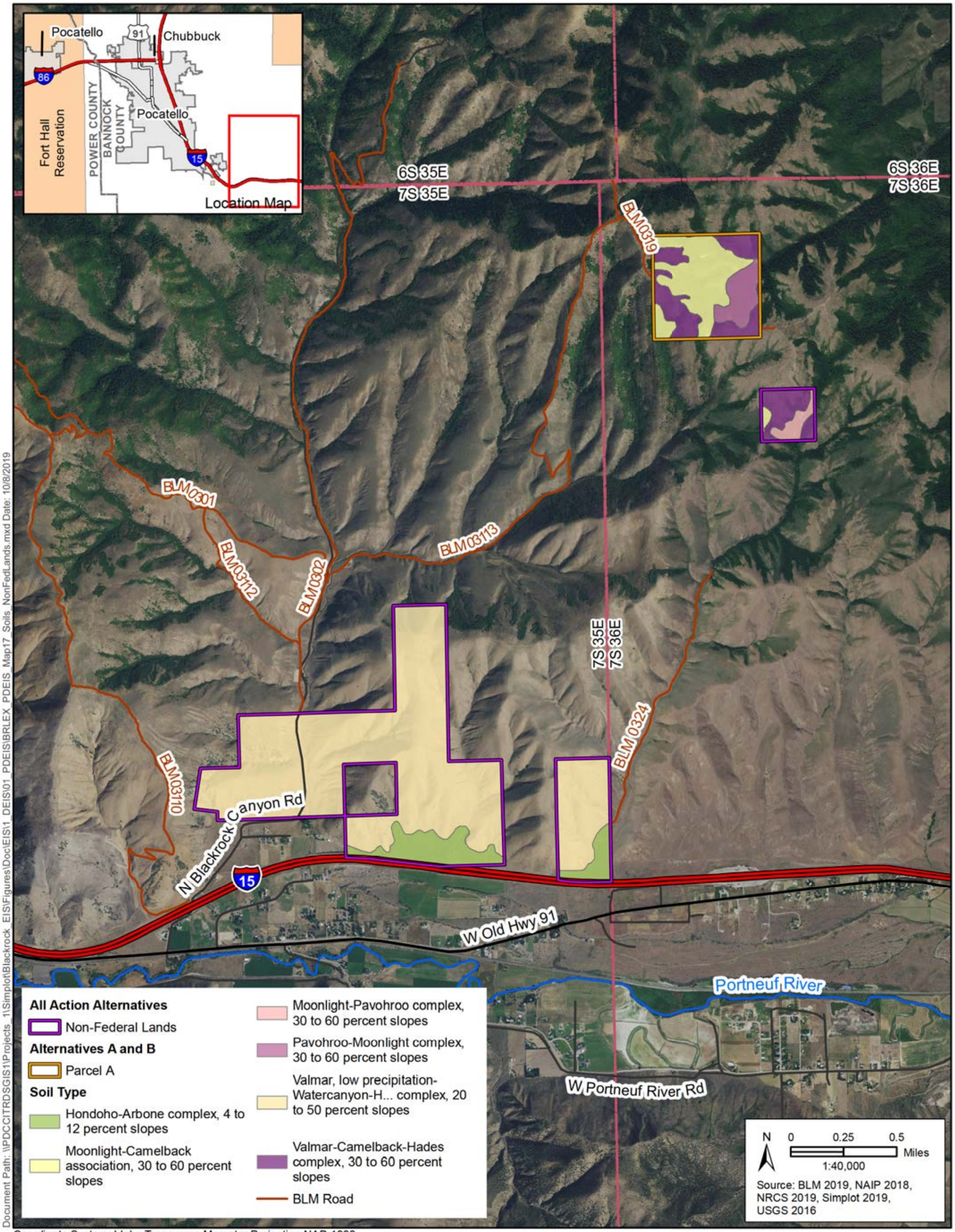


Coordinate System: Idaho Transverse Mercator Projection NAD 1983
No warranty is made by the Bureau of Land Management. The accuracy, reliability, or completeness of these data for individual use or aggregate use with other data is not guaranteed.

Map 15: Paleontology - Potential Fossil Yield Classification Federal Lands

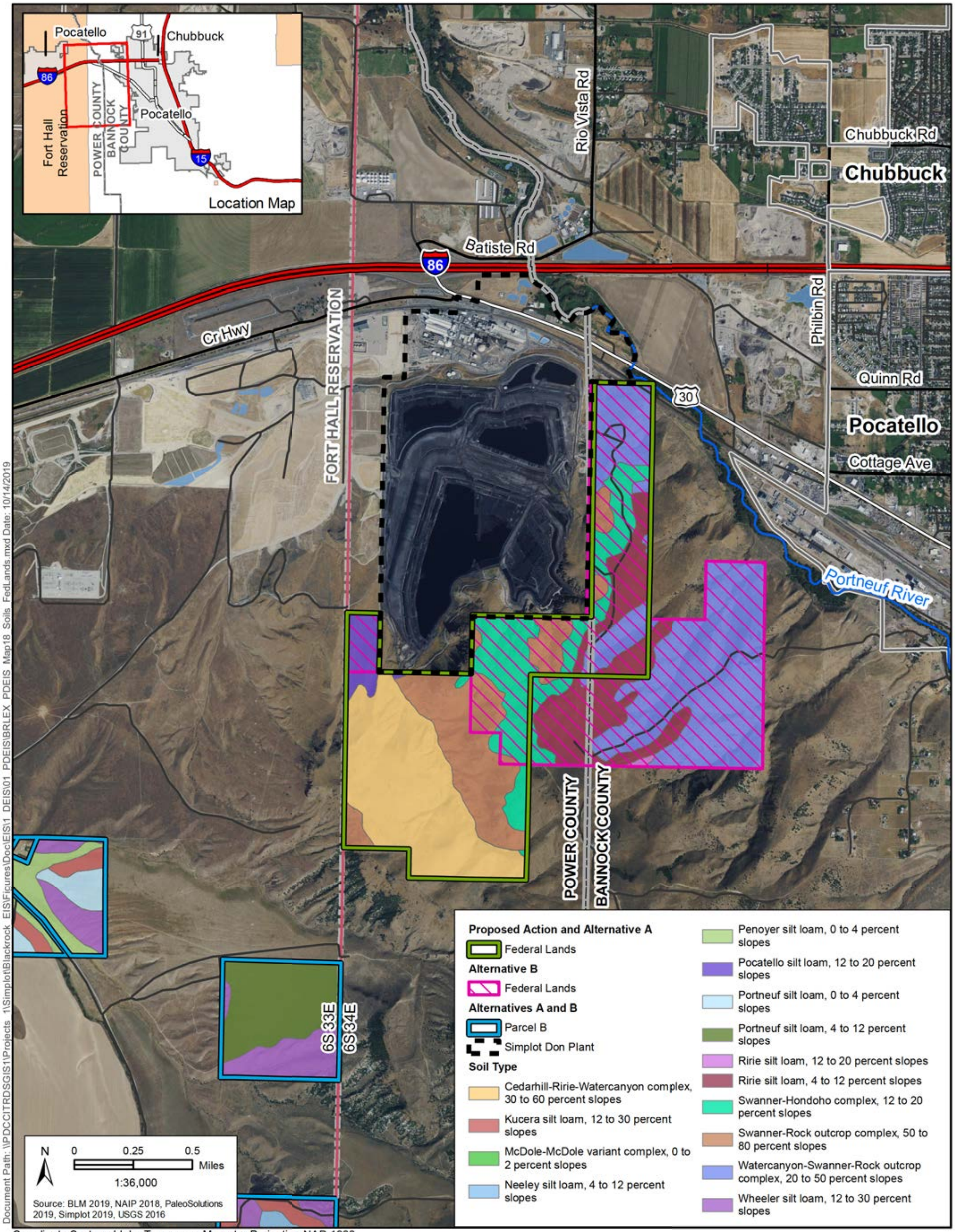


Map 16: Livestock Grazing - Grazing Allotments



Coordinate System: Idaho Transverse Mercator Projection NAD 1983
No warranty is made by the Bureau of Land Management. The accuracy, reliability, or completeness of these data for individual use or aggregate use with other data is not guaranteed.

Map 17: Soils - Non-Federal Lands and Parcel A



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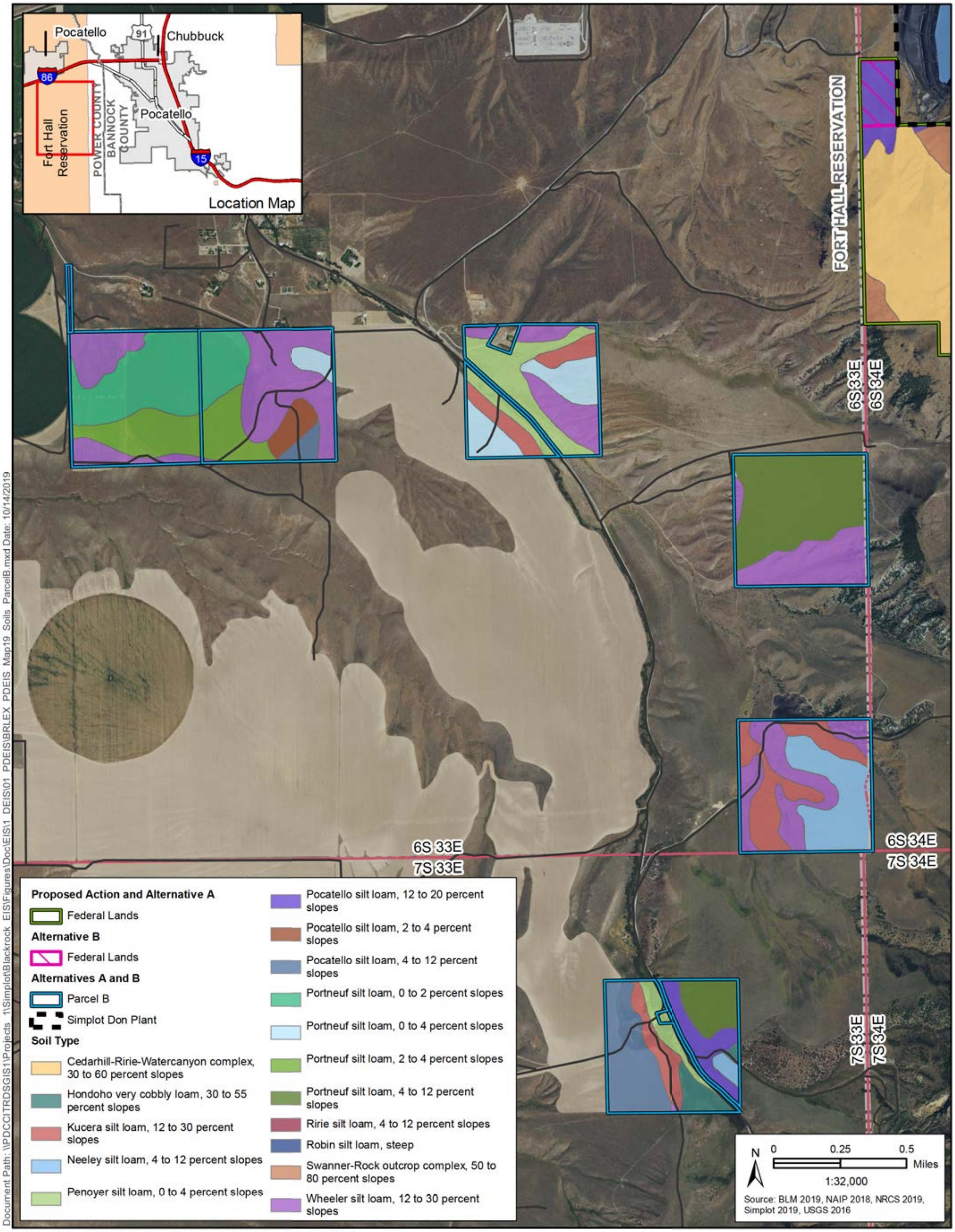
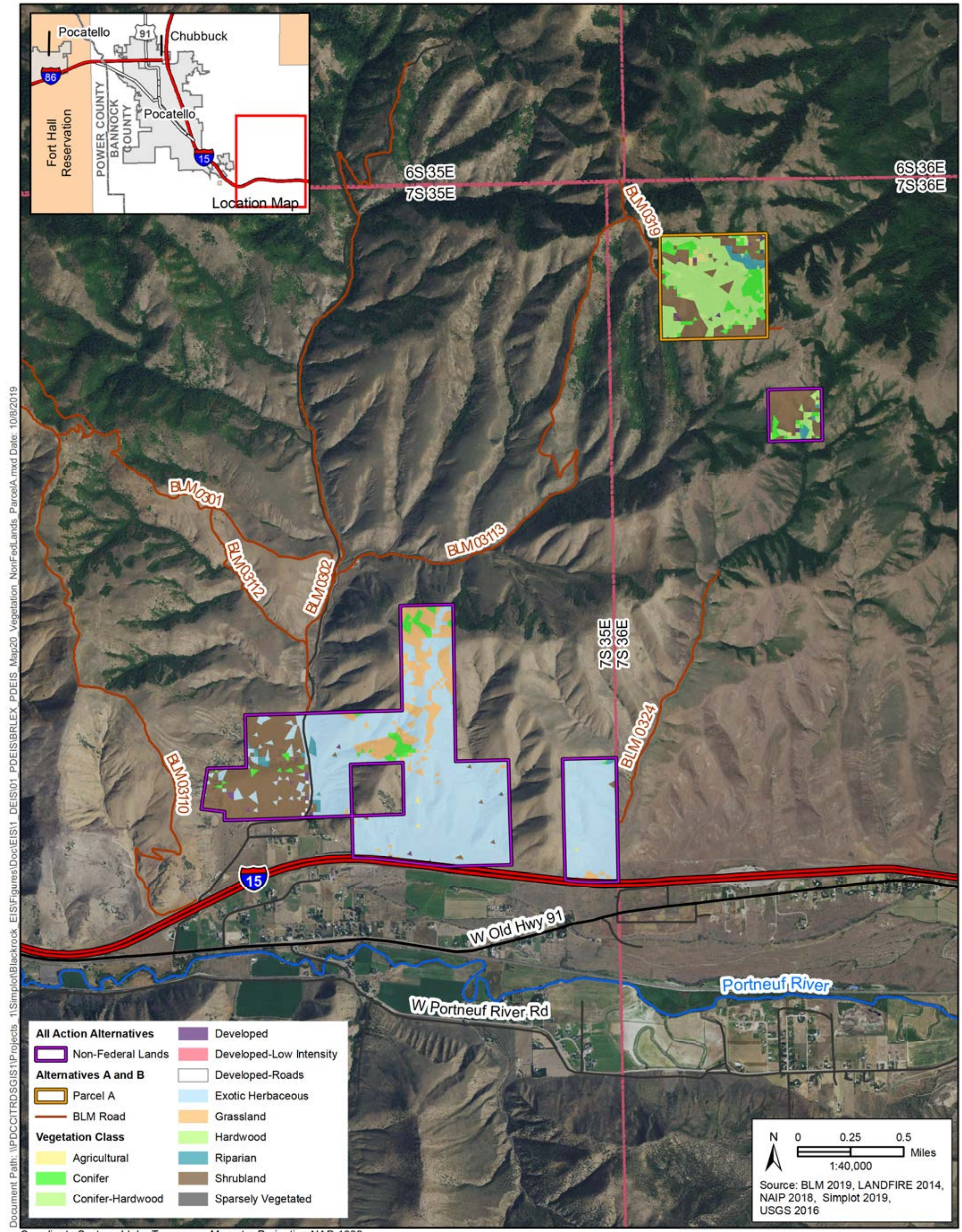
Coordinate System: Idaho Transverse Mercator Projection NAD 1983
No warranty is made by the Bureau of Land Management. The accuracy, reliability, or completeness of these data for individual use or aggregate use with other data is not guaranteed.

Map 18: Soils - Federal Lands



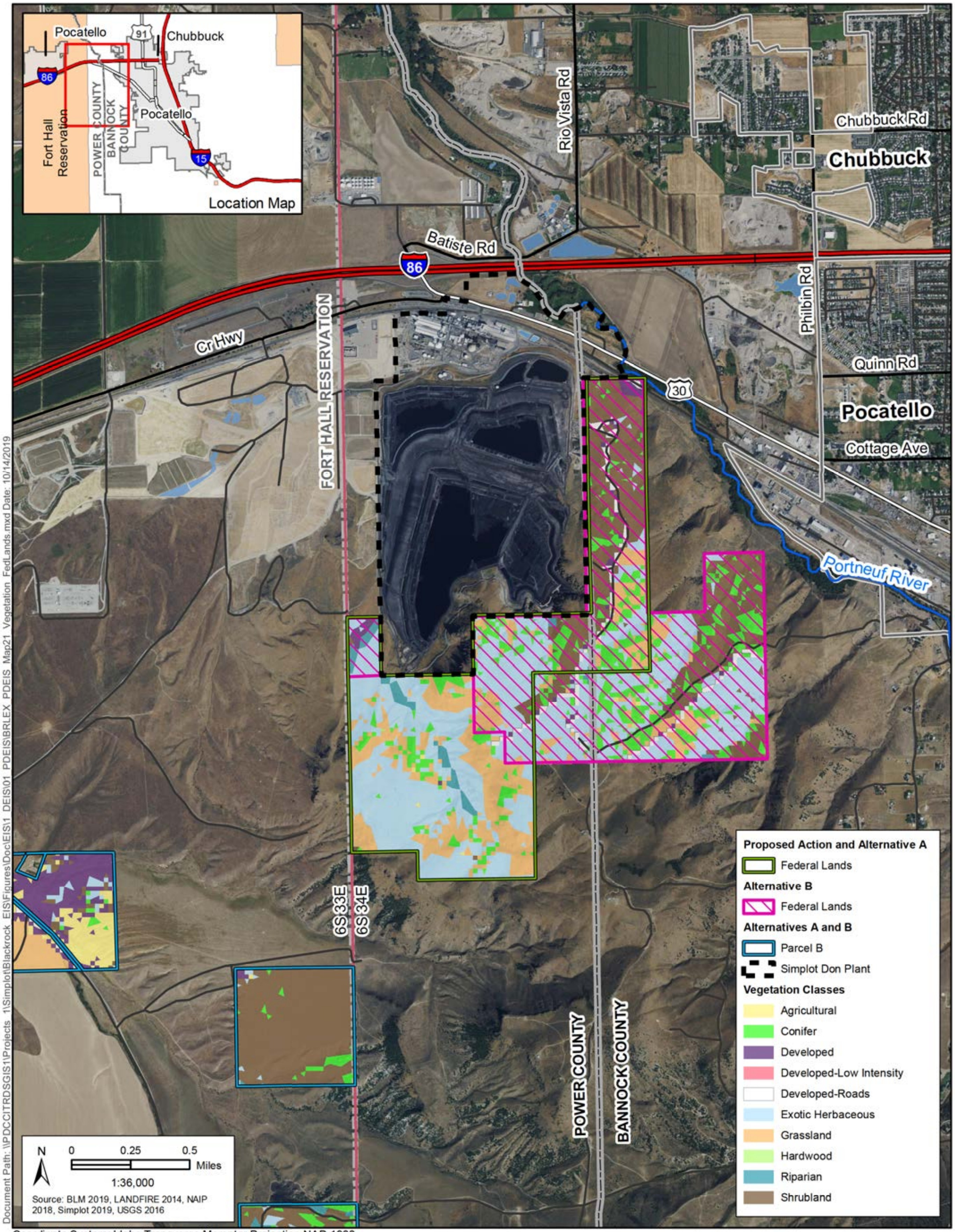
Coordinate System: Idaho Transverse Mercator Projection NAD 1983
No warranty is made by the Bureau of Land Management. The accuracy, reliability, or completeness of these data for individual use or aggregate use with other data is not guaranteed.

Map 19: Soils - Parcel B



Coordinate System: Idaho Transverse Mercator Projection NAD 1983
No warranty is made by the Bureau of Land Management. The accuracy, reliability, or completeness of these data for individual use or aggregate use with other data is not guaranteed.

Map 20: Vegetation - Non-Federal Lands and Parcel A



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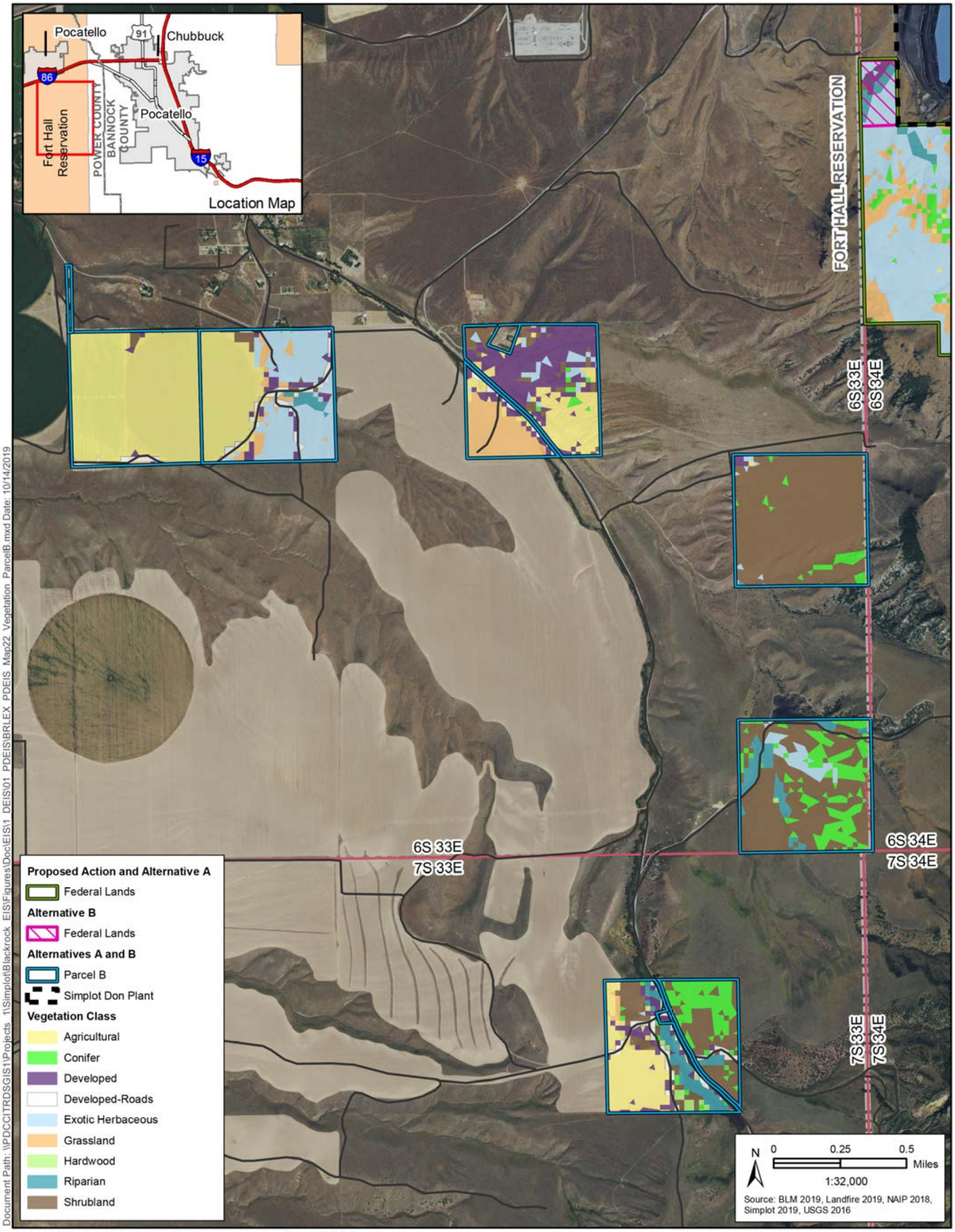
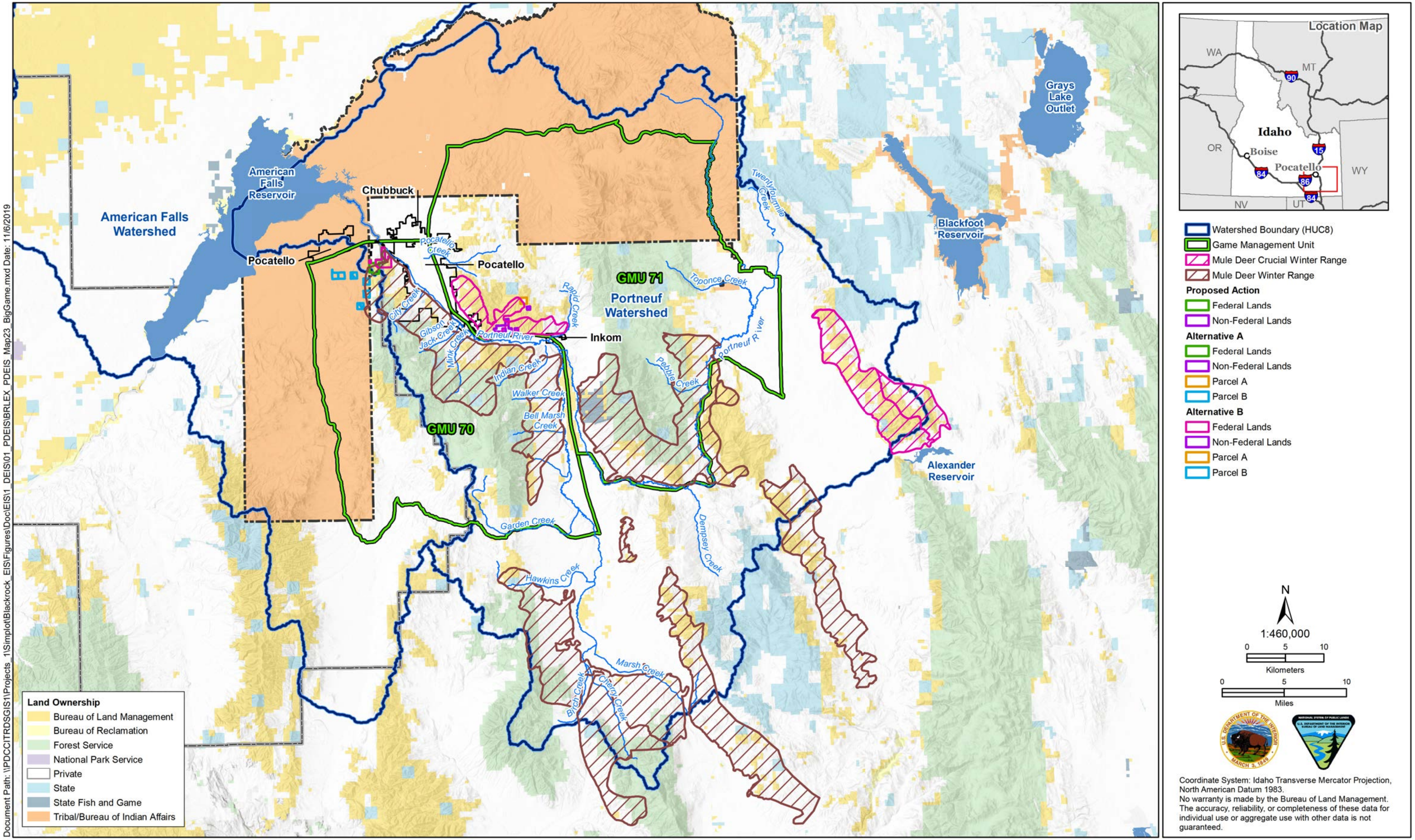
No warranty is made by the Bureau of Land Management. The accuracy, reliability, or completeness of these data for individual use or aggregate use with other data is not guaranteed.

Map 21: Vegetation - Federal Lands

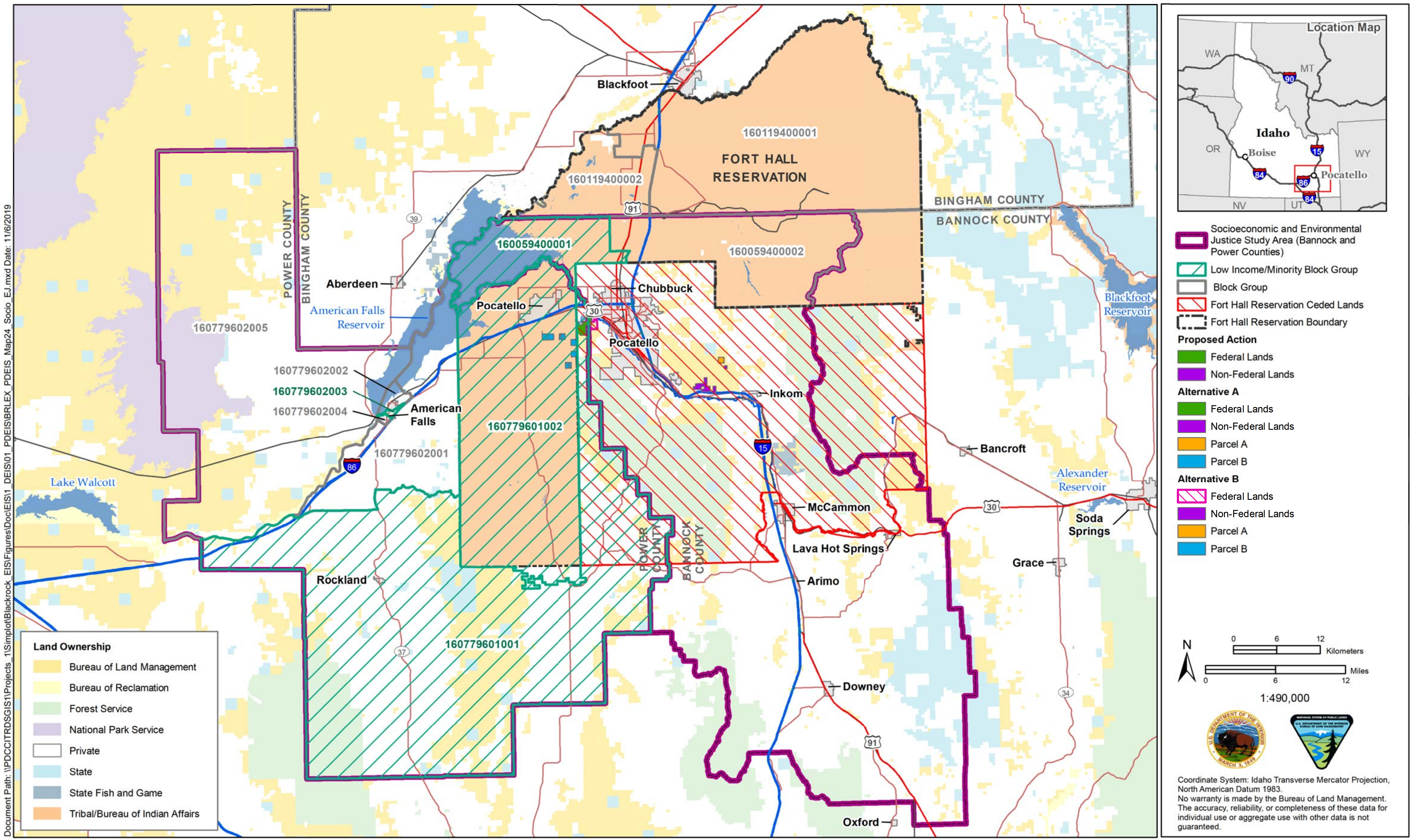


Coordinate System: Idaho Transverse Mercator Projection NAD 1983
No warranty is made by the Bureau of Land Management. The accuracy, reliability, or completeness of these data for individual use or aggregate use with other data is not guaranteed.

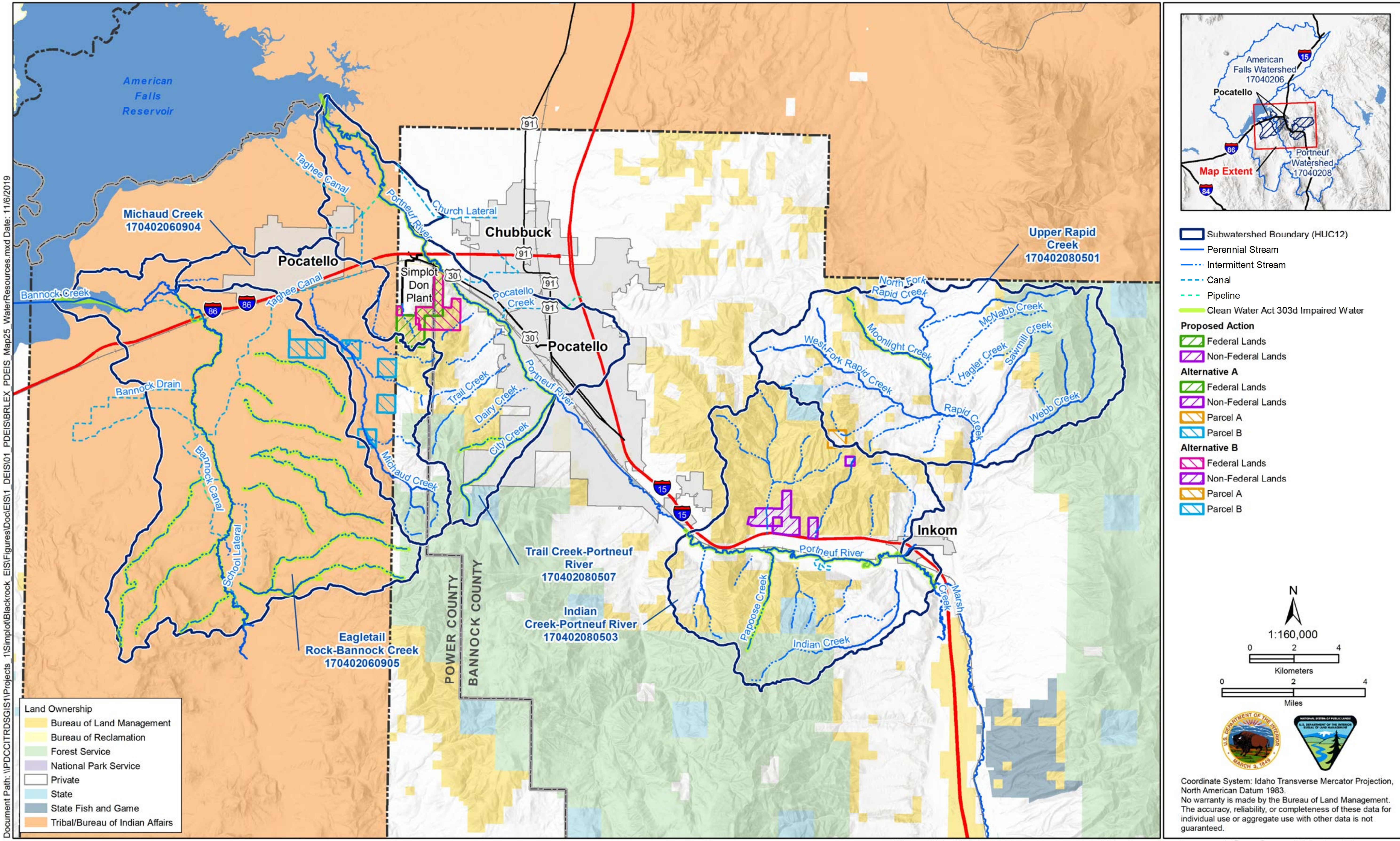
Map 22: Vegetation - Parcel B



Map 23: Fish and Wildlife - Big Game Areas and Fisheries



Map 24: Socioeconomics and Environmental Justice



Map 25: Water Resources - Watersheds and Surface Water Features

Blackrock Land Exchange

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Appendix D

BLM Interdisciplinary Team Checklist

Element of the Human Environment	Present Analyzed	Present Not Analyzed	Not Present	Rationale
Air Quality	X			The proposed land exchange would not directly affect air quality. However, ongoing emissions of criteria air pollutants and fluoride from continued and prolonged operation of the Don Plant, combined with emissions from reasonably foreseeable construction and operation activities on the Federal lands involved in the exchange, could affect air quality. The Federal lands are located within the Portneuf Valley particulate matter 10 microns or less in diameter (PM_{10}) Maintenance Area and directly adjacent to the Fort Hall PM_{10} Nonattainment Area. The Idaho Department of Environmental Quality (IDEQ) issued a Consent Order requiring reductions in fluoride and PM_{10} emissions from the Don Plant.
Climate Change	X			The proposed land exchange would not directly affect climate change. However, ongoing emissions of greenhouse gases from continued and prolonged operation of the Don Plant, combined with emissions from reasonably foreseeable construction and operation activities on the Federal lands involved in the exchange, would contribute to the regional and global budget of greenhouse gases in the atmosphere.
Cultural Resources	X			The Federal lands contain three known historic properties eligible for listing on the National Register of Historic Places. Transfer of historic properties out of Federal ownership through the proposed land exchange would constitute an adverse effect under 36 Code of Federal Regulations (CFR) 800.5(a)(2)(vii). Reasonably foreseeable actions on the Federal lands could result in permanent loss of these historic properties.
Tribal Treaty Rights and Trust Responsibilities	X			The proposed land exchange would result in a net loss of 52 acres of Federal lands available for exercise of off-reservation treaty rights. The 719 acres of the Federal lands would no longer be available for exercise of off-reservation treaty rights. The 667 acres of the non-Federal lands would become available for exercising off-reservation treaty rights. The Bureau of Land Management (BLM) will analyze potential effects on the Fort Hall Indian Reservation. Effects of the land exchange, in combination with those of other past, present, and reasonably foreseeable actions, could result in a cumulative loss of lands available for exercise of tribal treaty rights within the BLM Pocatello Field Office.
Geotechnical Stability	X			The proposed land exchange would not directly affect geotechnical stability. However, reasonably foreseeable development of the expanded gypsum stack and cooling ponds on the Federal lands presents a risk of failure and release of free liquid or flowable slurry if the geotechnical stability of the facilities is compromised by slope instability, seismic loading, overtopping, or other factors.

Element of the Human Environment	Present Analyzed	Present Not Analyzed	Not Present	Rationale
Hazardous or Solid Wastes	X			The Federal lands are within the Off-Plant Operational Unit of the Eastern Michaud Flats Superfund Site. The proposed land exchange would transfer lands known to contain contaminants of concern in vegetation and soils, and potentially groundwater, out of Federal ownership and to a potentially responsible party. Reasonably foreseeable development would result in storage and transport of Bevill Amendment-exempt wastes on the Federal lands from the Don Plant fertilizer manufacturing process.
Public Safety	X			The proposed land exchange would not directly affect public safety. However, reasonably foreseeable development of cooling ponds on the Federal lands could create public safety hazards by contributing to the formation of fog and ice on Interstate 86, U.S. Highway 30, and other areas with public access. Other potential effects on public health and safety will be addressed in relation to other critical elements such as air quality, geotechnical stability, hazardous or solid wastes, recreation, soils, vegetation, and water quality.
Recreation	X			The proposed land exchange would result in a net loss of 52 acres of public land within the Pocatello Special Recreation Management Area (SRMA), West Bench Recreation Management Zone (RMZ). The 719 acres of the Federal land would no longer be available for dispersed recreation. The 667 acres of the non-Federal land would be available for recreation opportunities and would secure permanent legal access to the approximately 15,000 acres of public land within the Pocatello SRMA, Blackrock RMZ. The Blackrock RMZ contains approximately 40 miles of designated off-highway vehicle trails and numerous developed recreation facilities. Transfer of the non-Federal lands into BLM administration would allow the establishment of legal access to designated routes T0351, T0352, and 0324, where the routes traverse the non-Federal lands, and would provide additional access to the BLM's Chinese Peak-Blackrock Trail System.
Visual Resources	X			The Federal lands would not be subject to BLM visual resource management (VRM) after the proposed land exchange, which would allow for a higher degree of visual change. Reasonably foreseeable actions for facilities supporting the Don Plant are likely to result in a high degree of visual change from certain observation points. The non-Federal lands would be managed as VRM Class III and IV objectives, which are consistent with adjacent Federal lands.
Lands and Realty	X			The proposed land exchange would result in the loss of public access to the Federal lands, but would establish additional legal public access to the non-Federal lands. The land exchange will require transfer or reservation of existing right-of-way authorizations encumbering both the Federal and non-Federal lands. Some existing authorized facilities on the Federal lands may need to be relocated to accommodate reasonably foreseeable actions on the parcel.

Element of the Human Environment	Present Analyzed	Present Not Analyzed	Not Present	Rationale
Livestock Grazing	X			The Federal lands would no longer be available for livestock grazing after being transferred out of Federal ownership, resulting in a loss of animal unit months (AUMs) within the Trail Creek-2 grazing allotment. There are no rangeland improvement projects on the Federal lands. The non-Federal lands acquired in the proposed exchange would be administered by the BLM within the Blackrock grazing allotment. No changes to AUMs or grazing management within the Blackrock allotment would occur. To the BLM's knowledge, there are no rangeland improvement projects located on the non-Federal lands.
Wildlife	X			The proposed land exchange would result in a net increase in the acreage of mule deer crucial winter range under BLM administration within the Pocatello Field Office, specifically the Blackrock big game winter range area. Additionally, the BLM anticipates consolidation of land administration within the crucial winter range. Reasonably foreseeable development of the Federal lands would remove existing wildlife habitat used by mule deer and other wildlife species. In spring 2019, a BLM biologist documented three large stick nests on cliff substrate on the Federal lands, one of which was occupied by an incubating golden eagle. The BLM will conduct additional wildlife surveys on the Federal and non-Federal lands in spring 2019, primarily to determine occupancy by breeding raptors.
Fish and Fisheries	X			The proposed land exchange may have an effect on fisheries. There is potential for effects on fisheries in the Portneuf River, largely through water quality impacts from phosphorous introduction via overland runoff and groundwater contribution from reasonably foreseeable actions. It is anticipated that J.R. Simplot Company's (Simplot's) compliance with obligations under the U.S. Environmental Protection Agency Record of Decision and IDEQ Consent Order for the Eastern Michaud Flats Superfund Site would limit the potential additional adverse effects of reasonably foreseeable actions on downstream fish and fisheries relative to existing baseline levels.
Soils	X			The Federal lands are within the Off-Plant Operational Unit of the Eastern Michaud Flats Superfund Site. The proposed land exchange would transfer soils known to contain contaminants of concern out of Federal ownership and to a potentially responsible party. Reasonably foreseeable actions would result in soil disturbance, compaction, loss of productivity, removal, erosion, and other effects on the Federal lands.

Element of the Human Environment	Present Analyzed	Present Not Analyzed	Not Present	Rationale
Vegetation	X			The Federal lands are within the Off-Plant Operational Unit of the Eastern Michaud Flats Superfund Site. The proposed land exchange would transfer fluoride-contaminated vegetation out of Federal ownership and to a potentially responsible party. The proposed land exchange would also change areas subject to BLM vegetation treatments and management of noxious weeds. Reasonably foreseeable actions would result in removal of vegetation from the Federal lands. The Federal and non-Federal lands will be surveyed for special status plant species in spring or summer 2019.
Wetlands and Riparian Zones	X			The Portneuf River is a perennial river that flows through the northeast corner of the Federal lands (approximately 100 feet) and supports a band of dense riparian vegetation. Field surveys identified one spring on the non-Federal lands. Reasonably foreseeable actions on the Federal lands are not anticipated to directly affect this area, but it could experience indirect effects from phosphorous introduction via overland runoff and groundwater contribution. Intermittent streams and springs on the non-Federal lands would be subject to BLM management intended to maintain riparian habitats in proper functioning condition after being transferred to Federal ownership.
Water Quality	X			The Federal lands are within the Off-Plant Operational Unit of the Eastern Michaud Flats Superfund Site with documented water quality issues. Reasonably foreseeable actions on the Federal lands could release additional contaminants into surface and groundwater, but would be subject to an existing IDEQ Consent Order establishing limits for phosphorus loading to the Portneuf River.
Socioeconomics and Environmental Justice	X			The proposed land exchange would change contributions to the tax bases of Bannock and Power Counties and payments in lieu of taxes the counties receive from the Federal Government. Reasonably foreseeable actions on the Federal lands would result in cumulative economic effects from the continued and prolonged operation of the Don Plant, its associated workforce, and economic activity generated by operational costs and expansion of Don Plant facilities. Reasonably foreseeable actions have the potential to contribute to disproportionately adverse effects on the Shoshone-Bannock Tribes, a minority and low-income population.
Geology	X			The proposed land exchange would not directly affect geology. However, the geology of the Federal lands is considered in assessing the geotechnical stability of reasonably foreseeable facilities and migration of groundwater and possible contaminants from the facilities. These geologic considerations are addressed in the *Geotechnical Stability* and *Water Quality* sections.

Element of the Human Environment	Present Analyzed	Present Not Analyzed	Not Present	Rationale
Paleontology	X			The Federal lands contain an area of Potential Fossil Yield Classification (PFYC) 4 (high potential). The approximately 449 acres of Federal land area with a PFYC of 4 are associated with the Starlight Formation, which has been known to yield moderately diverse and scientifically important assemblages of fossil mammals. The proposed land exchange would transfer this area potentially containing paleontological resources out of Federal administration to a private party. Construction of the reasonably foreseeable actions of the gypsum stack expansions and the cooling ponds would result in an estimated disturbance of 140 acres in PFYC 4 on the Federal lands that could affect paleontological resources.
Threatened and Endangered Species			X	The Federal and non-Federal lands are not within any special status species priority areas and the U.S. Fish and Wildlife Service has not identified any threatened or endangered wildlife, fish, or plants as occurring or potentially occurring. Due to the lack of any occurring or potentially occurring threatened or endangered wildlife species, potential impacts on Endangered Species Act–listed species would not occur and these species are not further analyzed in this Environmental Impact Statement.
Minerals		X		Currently, there no active mining claims, fluid mineral leases, solid mineral leases, or salable mineral authorizations within the Federal lands. The Federal and non-Federal lands proposed for exchange have low development potential for salable and locatable mineral resources and have no known mineral values for fluid and solid leasable mineral resources. Both lands are also prospectively valuable for oil and gas. The proposed land exchange would transfer the mineral estates associated with both the Federal and non-Federal lands. The mineral estate associated with the Federal lands would no longer be managed by the BLM. As per the Federal Land Policy and Management Act of 1976 Section 206(i)(2), the mineral estate within the non-Federal lands would be open to operation of public land laws and to entry, location, and patent under the mining laws following a 90-day segregation after the date of acceptance of title. 43 CFR 3501.5 defines acquired lands as lands or interests in lands, including mineral estates that the United States obtained through purchase, gift, or condemnation. Should the BLM decide to accept Parcel A, the mineral estate within the parcel would be managed as leasable minerals per 43 CFR 3501.1(a)(2) and the Mineral Leasing Act for Acquired Lands of 1947. Authorization of prospecting permits is discretionary per 43 CFR 3505.50(a) and issuance of Preference Right Leases could be rejected if mining is not the preferred use of the lands per 43 CFR 3507.19(b). As per 43 CFR 2091.8, the lands would not become subject to applicable land and mineral laws unless and until an order to that effect is issued by the BLM.

Element of the Human Environment	Present Analyzed	Present Not Analyzed	Not Present	Rationale
Noise		X		The proposed land exchange would not directly affect ambient noise levels. Noise from reasonably foreseeable actions on the Federal lands is not anticipated to notably change ambient noise levels at any nearby noise receptors, such as residences and the Fort Hall Reservation, relative to existing ambient noise from the ongoing operation of the Don Plant. Potential effects of noise on wildlife and other resources are discussed in those respective resource sections.
Existing and Potential Land Uses		X		Existing right-of-way authorizations are addressed in the *Lands and Realty* section; livestock grazing is addressed in the *Livestock Grazing* section.
Travel and Transportation		X		All applicable effects on travel and transportation are addressed in the *Recreation* and *Lands and Realty* sections.
Floodplains		X		“Zone A” floodplains designated by the Federal Emergency Management Agency are present adjacent to the Portneuf River within the Federal lands. None of the alternatives or reasonably foreseeable actions would involve construction of structures in, modification of, or Federal occupancy of the floodplain. In accordance with Executive Order 11988, there would be no alteration of the floodplains’ function, risk of loss of Federal facilities due to flooding, or impact on human safety from flooding.
Special Designations			X	Not present and not affected.
Farmlands, Prime or Unique			X	Not present and not affected.
Forest Resources			X	Not present and not affected.
Wild Horses and Burros			X	Not present and not affected.
Wilderness/Wilderness Study Areas			X	Not present and not affected.

Note: “Federal lands” are the lands requested by Simplot that would be transferred to private ownership with approval of the land exchange. “Non-Federal lands” are the lands offered by Simplot that would be transferred to the BLM with approval of the land exchange.

Blackrock Land Exchange

Final Environmental Impact Statement

Appendix E

Feasibility Study

Feasibility Study to Support Cooling Ponds and Gypsum Stack Expansion

Pocatello, Idaho

July 2018

Prepared for
J.R. Simplot Company

Feasibility Study to Support Cooling Ponds and Gypsum Stack Expansion

for

J.R. Simplot Company

Prepared by:

HDR, Inc.
412 East Parkcenter Boulevard, Suite 100
Boise, Idaho 83706

July 2018

Michael R. Murray, Ph.D.
Project Manager

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Acronyms

$\mu g/m^3$	micrograms per cubic meter
ACC	acceptable ambient concentration
AERMOD	air dispersion model
BLM	Bureau of Land Management
CO	consent order
EA	environmental assessment
EIS	environmental impact statement
EMF	Eastern Michaud Flat Superfund Site
FPC	fluoride process condensate
FMC	FMC Corporation
FS	Feasibility Study
HDPE	high density polyethylene
Hwy 30	Highway 30
I-86	Interstate 86
IDEQ	Idaho Department of Environmental Quality
NEPA	National Environmental Policy Act
NOV	notice of violation
RAP	remedial action plan
ROD	record of decision
Simplot	J.R. Simplot Company
USEPA	U.S. Environmental Protection Agency

1 Introduction

This feasibility study (FS) evaluates the J.R. Simplot Company's (Simplot) additional land needs to continue operations at the Don Plant, a phosphate fertilizer manufacturing facility near Pocatello, Idaho (**Figure 1-1** and **Figure 1-2)**. Simplot needs land for the following:

- Cooling Ponds - Additional land is needed to construct cooling ponds, which will replace cooling towers. The ponds would reduce fluoride emissions as required by an agreement between Simplot and the Idaho Department of Environmental Quality (IDEQ).
- Gypsum Storage Expansion - Additional land is needed to expand Simplot's existing gypsum storage facility (referred to as gypsum stack or gypstack) to meet future production storage needs. Simplot currently stores gypsum on private property (Don Plant).

1.1 Project Objective

The overall goal of this FS is to review Simplot's current and future land needs and assess available options to support ongoing operations at the Don Plant. Land options and Simplot's proposed actions include federal lands managed by the Pocatello Field Office, Bureau of Land Management (BLM). This study evaluates project needs (Don Plant operations), design elements and system requirements, potential locations, regulatory requirements, and land alternatives. It is proposed to serve as the basis for the BLM to pursue a land exchange, sale, or lease with Simplot to support cooling pond construction and future gypsum stack expansion.

1.2 Project Needs

1.2.1 Proposed Cooling Ponds

Simplot currently operates cooling towers at the phosphoric acid plant within the boundaries of the Don Plant. The towers cascade contact cooling water over packing to increase air contact and transfer heat load to the surrounding air through sensible heat transfer or evaporation. The cooling towers are considered a source of fluoride emissions. IDEQ issued a notice of violation (NOV) on February 12, 2013, to Simplot for violations of the fluoride forage standards (Idaho Administrative Procedures Act [IDAPA] 58.01.01.577.06), where fluoride concentrations in off-site forage samples exceeded standards. In response to the NOV, Simplot and IDEQ entered into a consent order (CO) on June 16, 2016 (Case No. E-2012.0022), requiring Simplot to reduce fluoride emissions from the Don Plant by one of the following methods (Section 10.A of the CO):

- Replace the existing reclaim cooling towers with a low emission alternative; or
- Incorporate measures that provide for greater than 50 percent fluoride emissions reductions from the reclaim cooling towers to demonstrate compliance with the fluoride in forage standards.

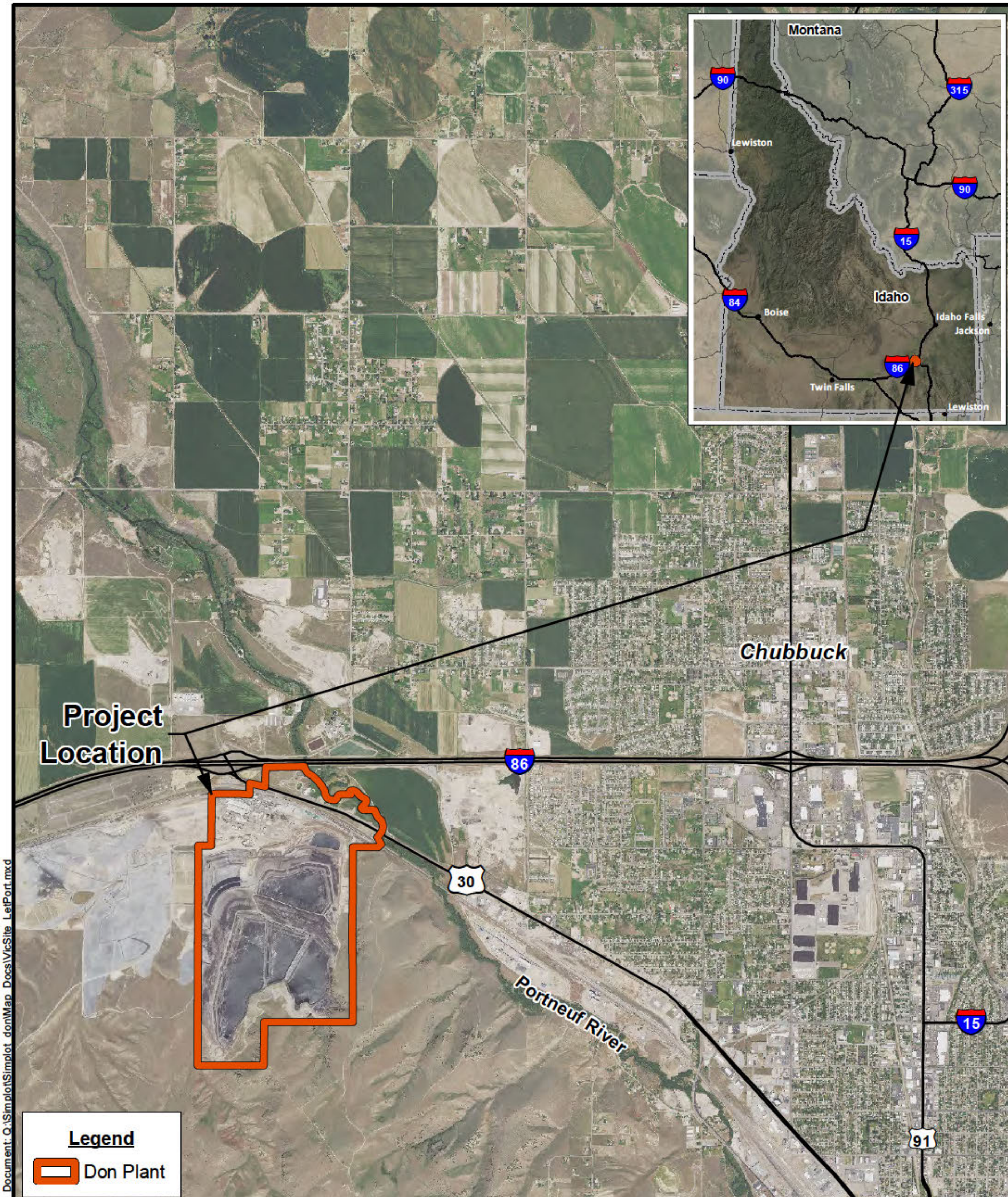
Simplot has evaluated alternatives for reducing fluoride emissions and has determined that cooling ponds are the most appropriate method for reducing fluoride emissions, while also continuing to meet operational requirements at the Don Plant facility. Simplot would use the ponds for heat transfer of the cooling circuit water rather than the cooling towers. The hot water would be pumped to the ponds, allowed to cool, and then returned to the cooling water circuit to be used again in a closed loop system (see Section 2 for details on the cooling ponds).

The implementation of cooling ponds would allow Simplot to meet the CO for replacing the existing reclaim cooling towers with a low emission alternative.

1.2.2 Proposed Gypsum Stack Expansion

Phosphogypsum is a byproduct of the chemical reaction that produces phosphoric acid. The gypsum is mechanically separated from the phosphoric acid and then mixed with process water for transport to a storage area located south and southeast of the plant site that abuts natural mountainous terrain to the south, known as the phosphogypsum (or gypsum) stack (**Figure 1-2**).

To meet future gypsum storage needs, Simplot must expand the gypsum stack laterally by placing the material on adjacent lands. If Simplot is unable to access additional land for suitable storage, the Don Plant would have to reduce production rates or even cease production altogether. A shutdown would be detrimental to the region’s economy.



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Simplot Don Plant, Pocatello, ID
Feasibility Study

Vicinity Map

Figure 1-1

Imagery: 2015 NAIP, 1 meter resolution
Source: USDA/NRCS Digital Gateway
Other Data Sources: INSIDE Idaho, Idaho Transportation Department; USGS

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Feet

Map ID	Owner
1	FMC Corporation
2	Simplot J.R. Company
3	Simplot Leasing Corp.
4	Ruby Company
5	Simplot J.R. Company
6	Northwest Pipeline Corporation
7	Simplot Industries Inc
8	Bannock County
9	Bannock County
10	Michaud Creek Ranches
11	Bannock County
12	Simplot Industries Inc

Imagery: 2016 1 foot resolution; Source: Simplot
2017 1 meter resolution; Source USDA/NRCS Digital Gateway
Other Data Sources: Inside Idaho; USGS; BLM; Bureau of Indian Affairs; Power County; Bannock County

Map Date: 4/17/2018

Figure 1-2. Land Ownership Map
Feasibility Study
Simplot Don Plant, Pocatello ID

2 Baseline Information

2.1 General Site Setting

The Don Plant operations are located in sections 7 and 18 of Township 6 South, Range 34 East, just west of Pocatello, Idaho (**Figure 1-1**). The plant is located at the base of the northern slope of the Bannock Range and along the western flank of the Portneuf Valley, where the range and river valley merge with the Snake River Plain in the area known as Michaud Flats. The Don Plant processing facility and gypsum stack areas are at the base of the Bannock Range where subsurface deposits represent a combination of materials derived from range erosion and materials deposited by the Portneuf River. Elevation of the Don Plant ranges from 4,450 to 5,000 feet above mean sea level (**Figure 2-1**).

Simplot conducted an investigation, under the jurisdiction of the U.S. Environmental Protection Agency (USEPA), into the original unlined gypsum stack system for potential environmental impacts to soil, air, surface water, and groundwater as part of the Eastern Michaud Flat Superfund Site (EMF). The investigation resulted in a June 1998 Record of Decision (ROD) requiring Simplot to reduce phosphorus loading in ground and surface water. In response to the ROD, Simplot initiated a multi-phase construction project to fully line the existing facility with the primary design objective of providing full containment of byproduct gypsum, associated process waters, and any runoff from active portions of gypsum storage area (Simplot 2015). The lining projects have included installing an impervious high density polyethylene (HDPE) liner on top of the stack and portions of the adjacent natural ground surface that allow continued use of the facility by stacking and vertical expansion of gypsum on top of the lined areas. From 2018 onward through the projected life of the current stack, several liner extensions or “raises” will be required to extend liner up adjacent slopes as the various phases grow vertically.

2.2 Process Water Cooling Operations

2.2.1 Phosphoric Acid Production

Phosphate fertilizer is produced by first reacting phosphate ore with sulfuric acid. This exothermic reaction produces phosphoric acid in a concentration ranging from 26 to 32 percent, as well as a di-hydrate calcium sulfate solid (phosphogypsum). Elemental constituents (e.g., fluoride (F), calcium (Ca), aluminum (Al), iron (Fe), magnesium (Mg), and, silica (Si)) naturally present in the ore are found in the phosphoric acid and phosphogypsum in varying levels. The heat produced in the reaction is removed by flash cooling the phosphoric acid under a slight vacuum and by an air sweep over the reaction vessel. The vapors from the flash cooler are condensed in a direct contact heat exchanger (barometric condenser) and the vapors from the reaction vessel air sweep are partially condensed and cleaned of pollutants in a cross-flow scrubber.

The dilute phosphoric acid from the reaction system is subsequently concentrated through evaporation to achieve required concentrations for processing into various fertilizer or industrial products. The evaporation occurs under a slight vacuum in forced circulation evaporation units

using steam. As water is removed from the phosphoric acid, more volatile components (mostly fluoride compounds) as well as small amounts of liquid entrainment are also present in the vapor. The vapor stream from the evaporators is condensed using direct contact heat exchangers (barometric condensers). The direct contact heat exchange requires large circulating flows and results in the cooling medium containing various compounds present in the phosphoric acid that either volatilize or carry over in liquid droplets with the water vapor to be condensed.

Most of the heat load from the phosphoric acid plant is removed using cooling towers, with a portion of the heat load removed using the phosphogypsum stack system. Emissions from cooling towers include both vapor and liquid (entrainment /drift losses).

2.2.2 Phosphogypsum

The phosphogypsum produced in the reaction system is removed from the phosphoric acid using filtration. The phosphogypsum filter cake is sluiced with water and pumped to the lined gypsum stack for storage. The stack allows for the phosphogypsum to settle out, and the transport water is captured and returned to the production plant for reuse.

2.2.3 General Water Balance

A general process flow diagram and water balance for current operations is presented in **Figure 2-2.** Water input into the system comes from fresh water (on-site wells), extraction well water, and from the slurried phosphate ore piped to the Don Plant from Simplot's Smoky Canyon Mine in southeast, Idaho.

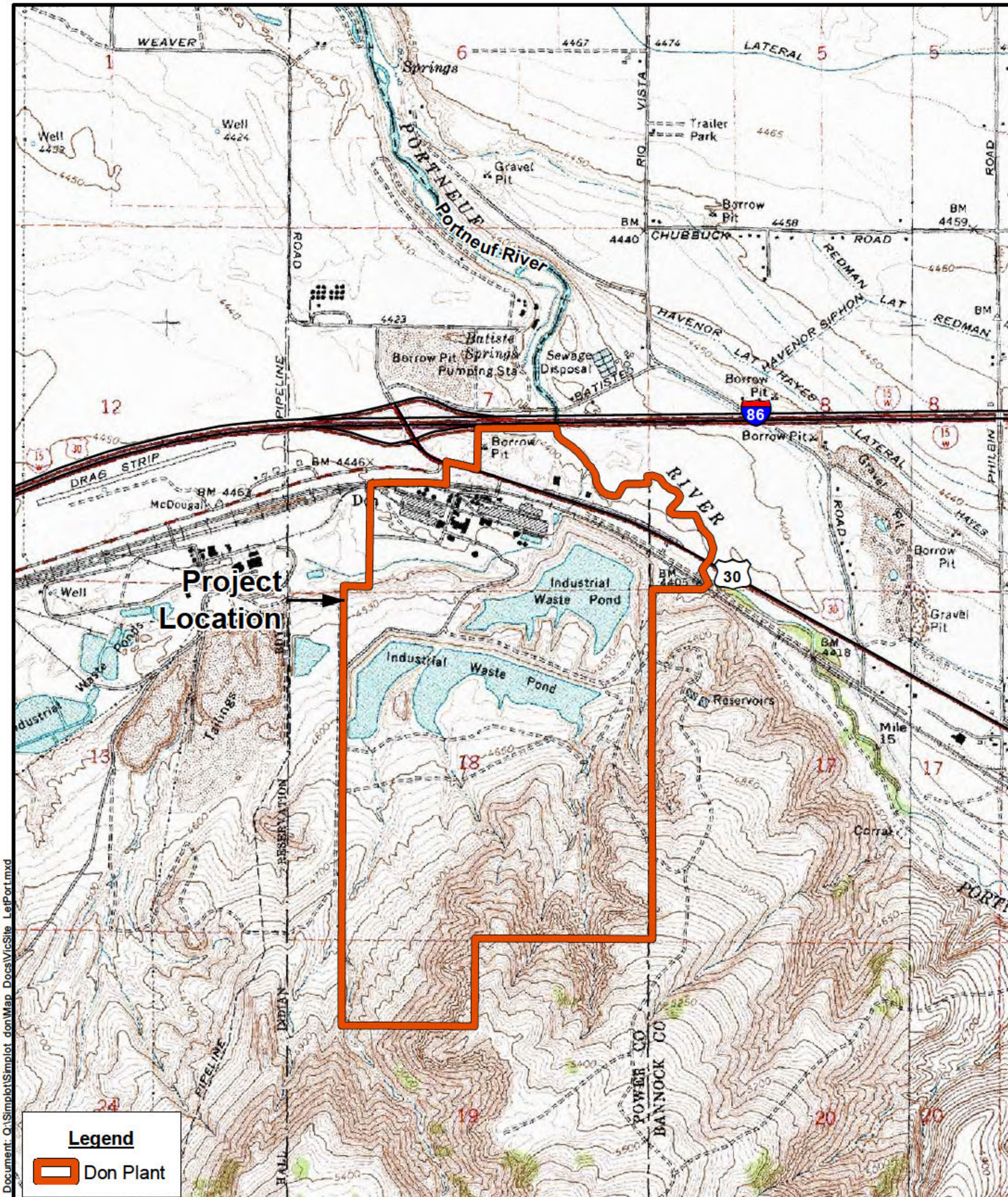
2.3 Gypsum Stack

The gypsum stack is located south and southeast of the processing facility and abuts natural mountainous terrain to the south (**Figure 1-1** and **Figure 2-1**).

2.3.1 Gypsum Stack Lining Project

The original gypsum stack system was unlined and became part of the USEPA's EMF superfund investigation and subsequent ROD requiring Simplot to reduce phosphorus loading to ground and surface water. Simplot has finished a liner installation project converting the unlined system to a lined and contained facility, with the primary objective of containing the byproduct gypsum, process water and runoff (Simplot 2015). The lining project has been conducted in six phases, which include the construction of two, lined decant ponds (**Figure 2-3**):

- Lined lower compartment (phase 1) – completed June 2011
- Lined north end of upper west compartment (phase 2) – completed October 2012
- Line south end of upper west compartment (phase 3) – completed October 2013
- West side of unlined upper east compartment (phase 4) – completed November 2014
- East side of unlined upper east compartment (phase 5) – completed November 2017
- Lateral expansion to extend the gypsum stack (phase 6) – completed October 2015
- Two lined decant ponds (east decant pond in 2009 and west decant pond in 2016)



Simplot Don Plant, Pocatello, ID
Feasibility Study

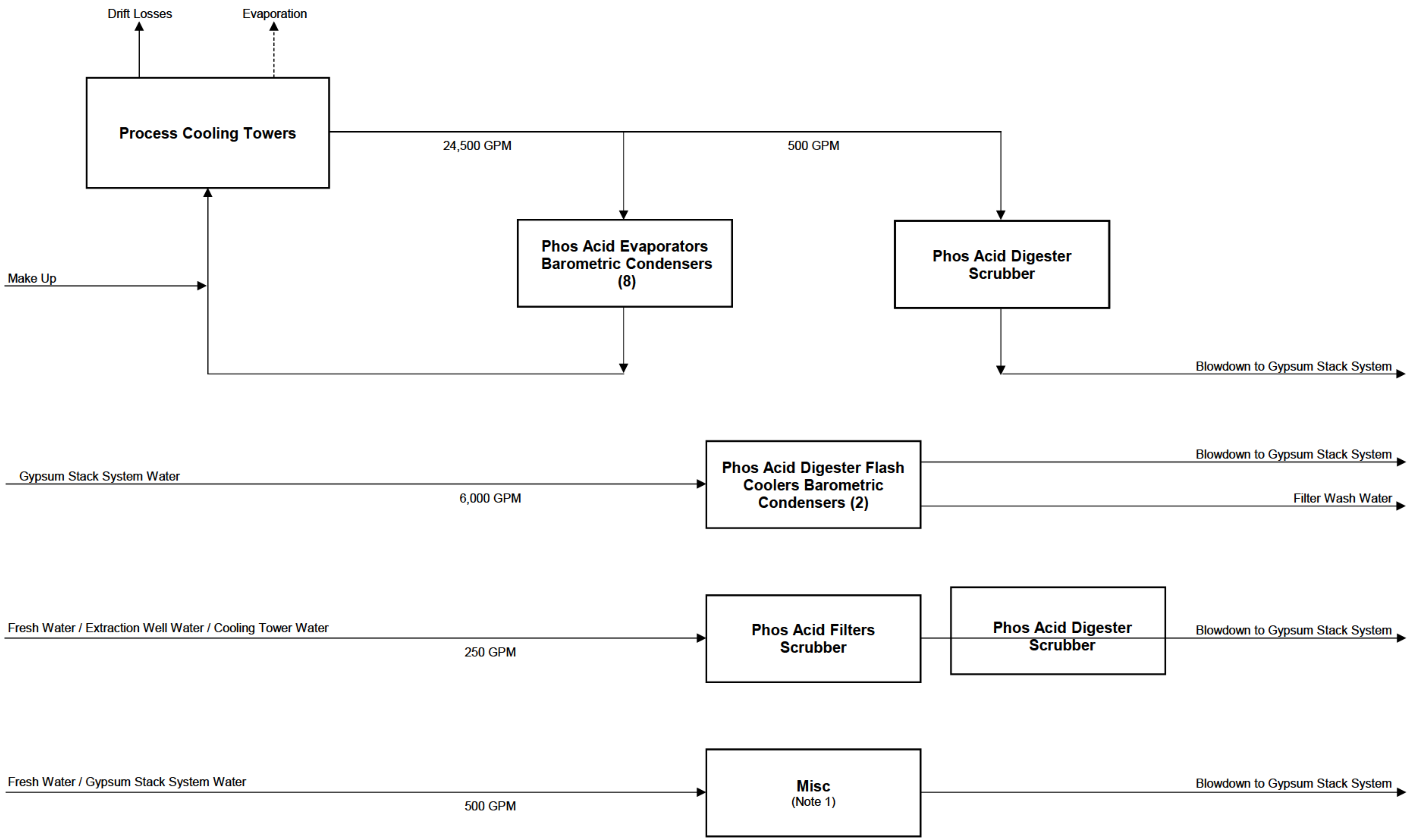
Figure 2-1

Topographic Map

Imagery: USGS 24k Topographic Map
Source: Idaho Department of Water Resources
Other Data Sources: INSIDE Idaho, Idaho Transportation Department; USGS

0 2,000 4,000
Feet

Document: Q:\Simplot\Simplot_don\Map_Docs\VicSite_LetPort.mxd



Notes:

1. Miscellaneous minor streams (vacuum pump seal water, pump seal water, etc…)

Simplot

AGRIBUSINESS GROUP POCATELLO, ID

REFERENCES

NO.	DESCRIPTION

REVISIONS

NO.	BY	DATE	DESCRIPTION	NO.	BY	DATE	DESCRIPTION

	RESP	DATE
DRAWN BY:		
DESIGNED BY:		
CHECKED BY:		
APPROVED BY:		

Phosphoric Acid Plant

Process Cooling System (Existing)

Block Flow Diagram

Figure 2-2

SCALE: None

Revision

Figure 2-3. Gypstack Lining Projects (Phases 1 to 6)
Feasibility Study
Simplot Don Plant, Pocatello ID

The design elements for the storage compartments included preparation of the existing gypsum surface, installing 60-mil HDPE bottom liner; inner and starter dikes above liner; dike stabilization underdrains; header pipes and conduits to transfer collected seepage to the decant pond; a gypsum starter dike; lined perimeter flow channel for the control of surface water runoff, seepage, and decant return water flow (Ardaman & Associates 2017).

2.3.2 Gypsum Stack Operating Techniques

The gypsum stack is operated using a wet slurry technique, where gypsum filter cake is removed from the plant belt filters and slurried with recycled process water and pumped at 28 to 30 percent solids to a designated settling compartment on top of the lined gypsum stack area. The solids are allowed to settle in clarification ponds maintained on top of the stack, and the clarified process water (slurry water) is decanted or pumped back to the plant for reuse in subsequent slurry operations. The gypsum stack is operated and gradually raised using the upstream method of construction, in conjunction with a perimeter rim-ditch method of slurry distribution within the various clarification ponds. With this method, the settled gypsum deposits on top of the stack are periodically excavated from the perimeter rim-ditch system and used as fill to incrementally raise the perimeter containment dike and/or inner berm of the rim-ditch system.

2.3.3 Production Rate

Since Ardaman, the gypstack engineer of record, developed design assumptions in 2008 as part of the gypsum stack liner project, the Don Plant has experienced higher production rates and accelerated stack growth. A more recent study by Keller Associates recommends revising the gypsum production rates (Keller 2017a). Developing a high-level gypsum stack growth model, Keller Associates projects that the lined upper compartment (Phase 2, 3, 4, and 5) of the gypsum stack will reach design capacity by 2031 with the top of gypsum stack reaching an elevation of 5,005 feet above mean sea level if limited to Simplot's present Don Plant property (Keller Associates 2017b). The lower compartments (Phases 1 and 6) would still have capacity at this time, however additional compartments to distribute/manage gypsum slurry and process water may be needed to utilize this space. In order to maintain uninterrupted operation of the facility, the gypsum stack will need to be expanded in advance of the target date when the upper compartment reaches terminal elevation.

2.4 Land Exchange – Past Activities

In 1994, Simplot initiated activities with the BLM Pocatello Field Office to exchange private (offered) land for public (selected) land in order to expand their gypsum stack. At that time, Simplot was uncertain about their ability to place a liner and leachate collection system on top of the existing (unlined) gypsum stack and sought out additional land.

The purpose of the land exchange was for Simplot to obtain land adjacent to and south of the Don Plant (currently BLM land). As requested by BLM, the private land Simplot offered in exchange was in the Blackrock and Caddy Canyon areas (referred to as the Blackrock property), approximately 9 miles southeast of Pocatello.

BLM analyzed the proposed land exchange in an environmental assessment (EA) (under the National Environmental Policy Act [NEPA]). The exchange involved 719 acres of selected public land and 681 acres of offered private land. The Shoshone-Bannock Tribes contested the EA, published for public review in October 2006. In a May 2011 memorandum decision, the Federal District Court of Idaho held that the EA violated NEPA by failing to conduct a sufficient analysis and instructed BLM to prepare an environmental impact statement (EIS).

Since the court's decision in 2011, Simplot has expanded (Phase 6) its gypsum operations and added lined compartments for receiving gypsum, leachate collection systems, and lined decant ponds. This design, construction, and operational experience has provided Simplot important information and experience useful for expanding the gypsum stack operations onto off-site land such as the proposed south and east canyon areas, including: (1) the amount of waste that would be stored in the canyon south of the Don Plant; (2) preparation needed for waste storage; (3) the type of liner; (4) installation of the liner in the canyon terrain; and (5) information related to groundwater flows under the canyon. These issues are discussed more fully below.

3 Proposed Actions

This section describes Simplot's proposed expansion locations and conceptual designs for cooling ponds and gypsum stack expansion. Section 4 describes alternatives considered in siting the ponds and gypsum stack.

3.1 Replace Cooling Towers with Cooling Ponds

As described in Section 1.2.1, Simplot entered into a CO with IDEQ (Case No. E-2012.0022) requiring that Simplot reduce fluoride emissions from the Don Plant by either replacing the existing reclaim cooling towers with a low emission alternative or incorporating measures that provide for greater than 50 percent fluoride emissions reductions from the reclaim cooling towers with demonstration of compliance with the fluoride in forage standards. Simplot has conducted an assessment of alternatives and found that using lined cooling pond(s) to remove the heat load from the phosphoric acid plant is the preferred approach to meet the CO requirements. Simplot would transfer the process cooling water to cooling pond(s), where water would be cooled and then pumped back to the cooling system for reuse.

Based on conceptual level design and process water cooling studies, Simplot proposes to construct at least two ponds (cooling ponds 1 and 2) to the east of the gypsum stack (**Figure 3-1**). The area required for the cooling ponds (disturbance area including cut and fill) is approximately 80 to 100 acres (Simplot 2018). The range in area is due to potential design options, including using current gypsum stack ponds for cooling, blending tanks, and other related technologies. For planning purposes, 100 acres of pond disturbance area is assumed plus additional acreage for buffers around the ponds, access roads, and related infrastructure.

Figure 3-2 presents a process flow diagram and water balance illustrating the conceptual cooling pond system. Ponds 1 and 2 would be located on both Simplot and BLM land. **Table 3-1** summarizes approximate disturbance of each pond with cut and fill, and the acreages on Simplot (private) and BLM (federal) lands. **Figure 3-3** illustrates disturbance areas, buffers, and acreage estimates.

Table 3-1. Cooling Ponds Disturbance Area

Land Ownership	Pond 1	Pond 2	Total
	(acres)		
Simplot (Private Land)			
Pond w/cut and fill	18.8	15.2	34.0
Access, utilities, and buffers	23.4		23.4
		Simplot total	57.4
BLM (Public Land)			
Pond w/cut and fill	34.5	29.1	63.6
Access, utilities, and buffers	24.9		24.9
		BLM Land total	88.5
		Grand Total	**145.9**

In order to construct these ponds in this location, Simplot would require approximately 88.5 acres of BLM land. This acreage includes access roads, underground utility corridor (water piping), and a 200-foot buffer around each pond. A conceptual level grading plan of the cooling ponds is presented in Appendix A.

3.2 Expand Gypsum Stack to East, South, and West Canyon Areas

To meet future gypsum storage needs, Simplot proposes acquiring (sale, exchange or lease) public land located east, south, and west of its Don Plant. **Figure 3-1** and **Figure 3-3** illustrate the current Don Plant gypsum stack system and the proposed lateral gypsum stack expansions areas onto adjacent BLM land. As illustrated, the build out includes expanding to the east canyon area (near the proposed cooling ponds), south canyon area to two small canyon areas south of the current gypsum stack area and then a large canyon area to the southwest (called west expansion herein). **Table 3-2** summarizes acreages of disturbances and includes buffers around the area (buffers allow room for pipelines, access roads, and native vegetation strip between stack and federal land). **Figure 3-3** illustrates the expansion areas and associated disturbance acreages.

Table 3-2. Gypsum Stack Disturbance Area

Land Ownership	Disturbance Area (acres)
Simplot (Private Land)	
See **Figure 3-3** for acreages on private associated with gypsum stack expansion.	
BLM (Public Land)	
West Canyon stack area Buffers Total	74.6 48.4 123
Main Stack (south) stack area Buffers Total	10.5 16.0 26.3
East Canyon stack area Buffers Total	24.0 15.0 39.0
BLM Land Total	**188.5**

Design concepts for the gypsum stack expansion (proposed action) are described in Appendix B.

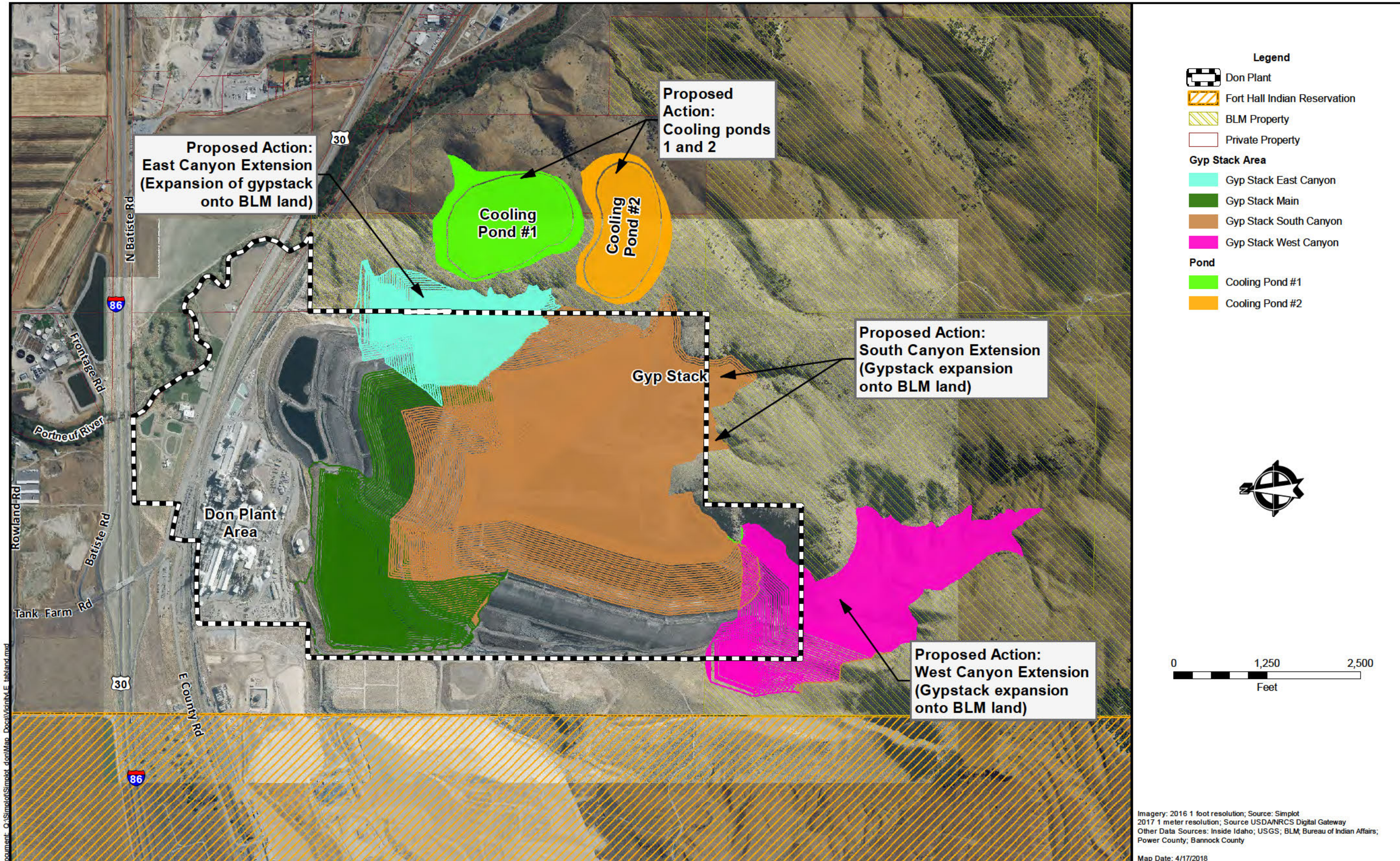
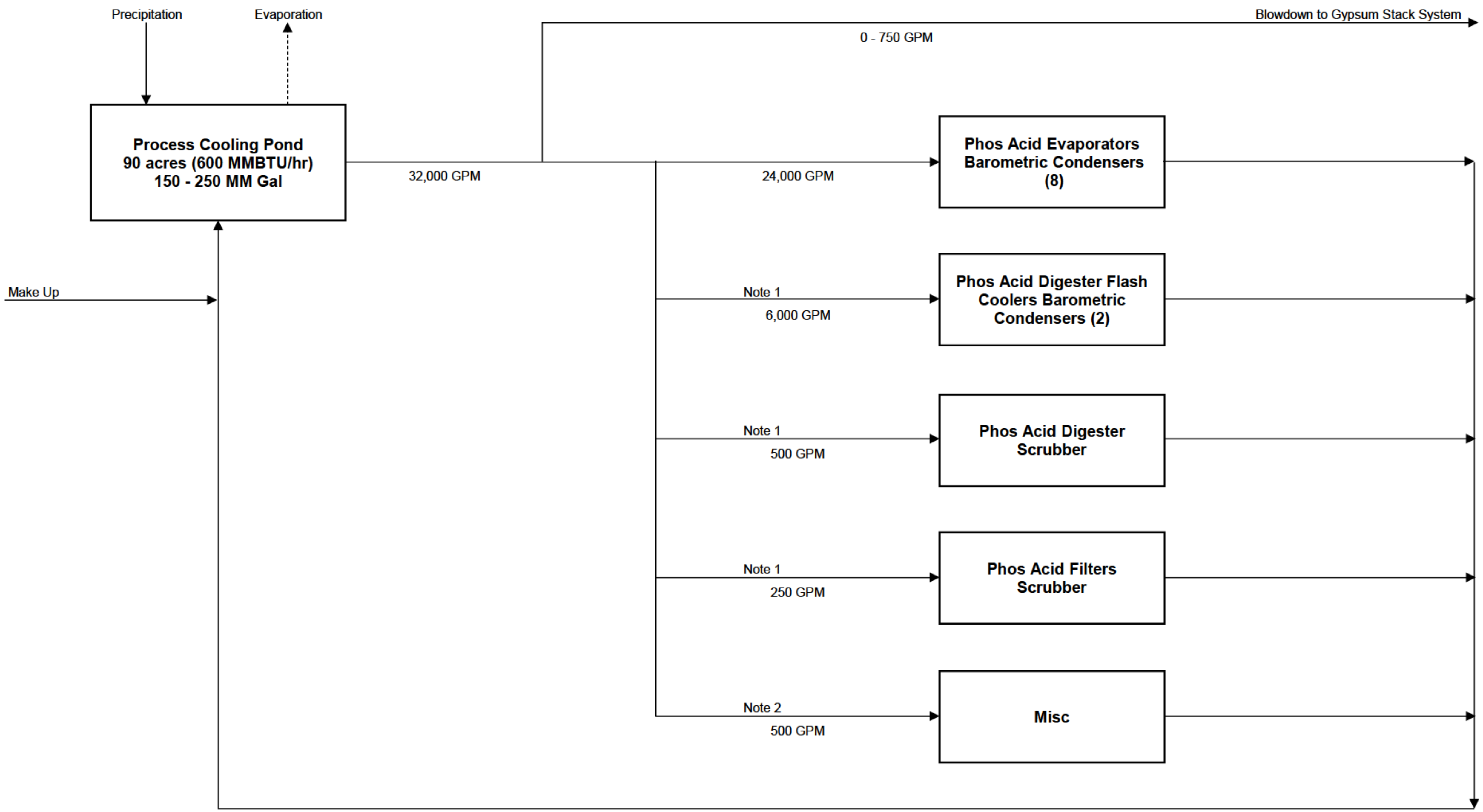


Figure 3-1. Proposed Actions for Cooling Ponds and Gypstack Expansion
Feasibility Study
Simplot Don Plant, Pocatello ID



Notes:

1. Currently part of Gypsum Stack System; heat load may be relocated to Cooling Pond depending on Process requirements

2. Miscellaneous minor streams (vacuum pump seal water, pump seal water, etc…)

AGRIBUSINESS GROUP POCATELLO, ID

REFERENCES

NO.	DESCRIPTION

REVISIONS

NO.	BY	DATE	DESCRIPTION	NO.	BY	DATE	DESCRIPTION

RESP	DATE
DRAWN BY:	
DESIGNED BY:	
CHECKED BY:	
APPROVED BY:	

Phosphoric Acid Plant

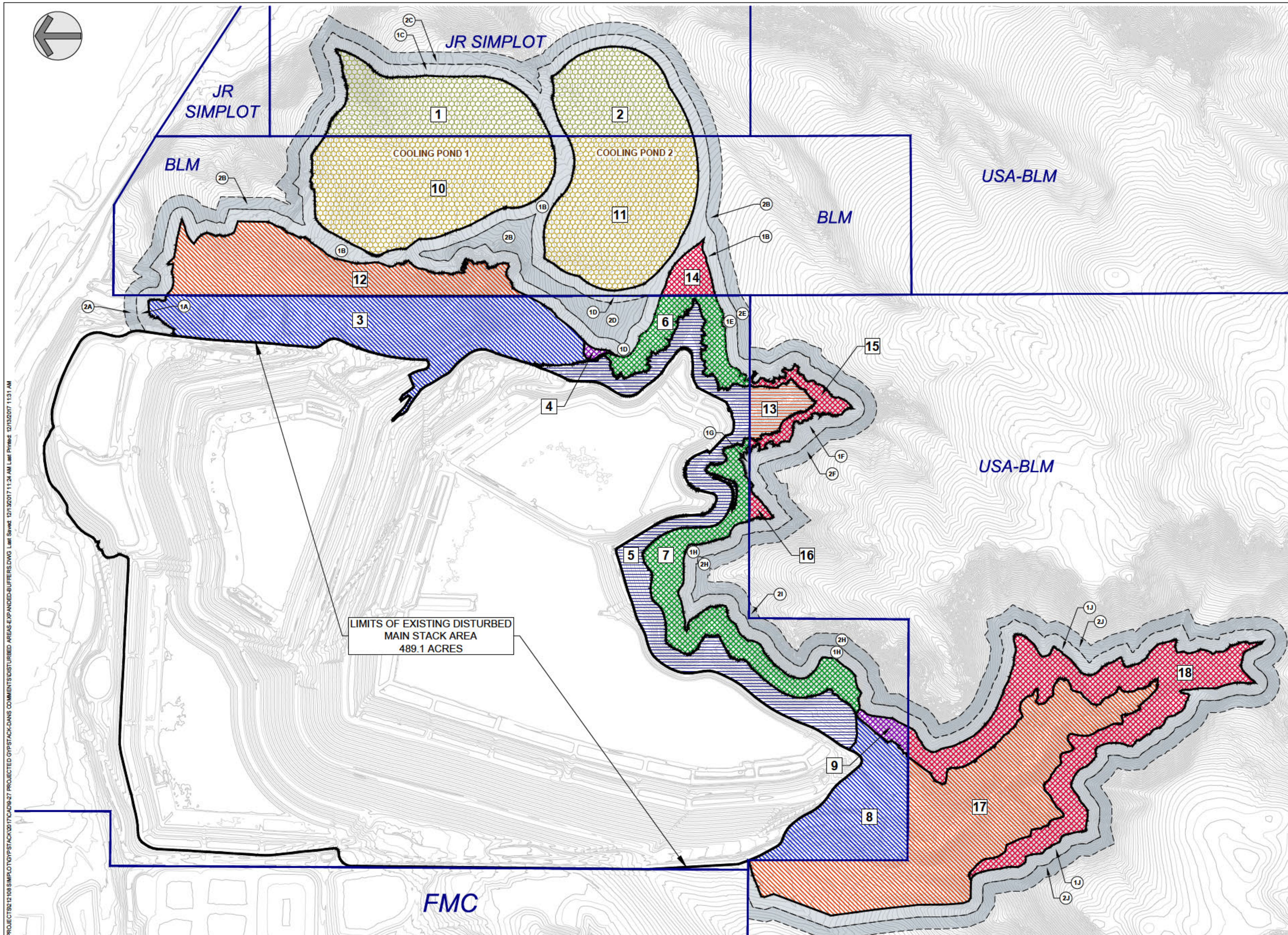
Process Cooling Pond System (Proposed)

Block Flow Diagram

Figure 3-2

SCALE: None

Revision



JR SIMPLOT PROPERTY		
1	COOLING POND 1	18.8 AC.
2	COOLING POND 2	15.2 AC.
3	EAST CANYON - UP TO 5005 EL.	35.9 AC.
4	EAST CANYON - 5005 EL. TO 5105 EL.	0.4 AC.
5	MAIN STACK - UP TO 5105 EL. (A)	26.3 AC.
6	MAIN STACK - 5005 EL. TO 5105 EL. (A)	7.4 AC.
7	MAIN STACK - 5005 EL. TO 5105 EL. (B)	16.7 AC.
8	WEST CANYON - UP TO 5005 EL.	17.0 AC.
9	WEST CANYON - 5005 EL. TO 5105 EL.	1.5 AC.

100 FT BUFFER		200 FT BUFFER	
1A	1.2 AC.	2A	3.1 AC.
1C	11.9 AC.	2C	23.4 AC.
1D	3.7 AC.	2D	7.5 AC.
1E	1.7 AC.	2E	3.0 AC.
1G	0.2 AC.	2G	–
1H	8.4 AC.	2H	15.5 AC.

BUREAU OF LAND MANAGEMENT		
10	COOLING POND 1	34.5 AC.
11	COOLING POND 2	29.1 AC.
12	EAST CANYON - UP TO 5005 EL.	24.0 AC.
13	MAIN STACK - UP TO 5005 EL.	3.7 AC.
14	MAIN STACK - 5005 EL. TO 5105 EL. (A)	2.8 AC.
15	MAIN STACK - 5005 EL. TO 5105 EL. (B)	3.4 AC.
16	MAIN STACK - 5005 EL. TO 5105 EL. (C)	0.6 AC.
17	WEST CANYON - UP TO 5005 EL.	45.3 AC.
18	WEST CANYON - 5005 EL. TO 5105 EL.	29.3 AC.

100 FT BUFFER		200 FT BUFFER	
1B	25.2 AC.	2B	39.9 AC.
1F	8.0 AC.	2F	15.8 AC.
1I	–	2I	0.2 AC.
1J	24.3 AC.	2J	48.4 A.C

NO.	REVISIONS	BY	DATE

DRAWN: CKL
CHECKED: SJL
DESIGNED: —
APPROVED: SJL
CAD NAME:
SCALE: (Based on 11"x17" sheet) NOT TO SCALE

KELLER ASSOCIATES
3153 McNeil Drive
Idaho Falls, Idaho 83402
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Simplot
AGRIBUSINESS GROUP POCATELLO, IDAHO

Figure 3-3 Disturbance Area

DISTURBED AREAS-100 FT & 200 FT BUFFER

PROJECT NO. 212108

SHEET NO. 1

4 Alternatives

Simplot considered both on-site and off-site locations for the cooling ponds and for the gypsum stack expansion. This section summarizes alternatives considered and the rationale for selecting the proposed actions presented in Section 3.

4.1 Proposed Fluoride Reduction Alternatives

The IDEQ CO requires Simplot to reduce fluoride emissions from the Don Plant by one of the following approaches:

- Replace the existing reclaim cooling towers with a low emission alternative; or
- Incorporate measures that reduce fluoride emissions by more than 50 percent from the reclaim cooling towers to demonstrate compliance with the fluoride in forage standards.

4.1.1 No Action Alternative

Under a no action alternative, the cooling ponds would not be constructed and the cooling towers would remain. Simplot would not meet CO requirements (Case No. E-2012-.0022) and fluoride emissions would not be reduced.

4.1.2 Cooling Ponds

Use of lined cooling ponds would be a low-emission alternative to the cooling towers. Studies have found that if adequate land is available, ponds could be built with sufficient surface area to meet cooling requirements and allow for decommissioning of the cooling towers.

4.1.3 Indirect Process Water Cooling

This process involves converting the existing direct contact process water cooling towers to non-contact or fresh water cooling towers. Conversion to indirect cooling would involve installing heat exchangers to transfer heat load between the recirculated process cooling water stream and non-contact cooling water that would be recirculated through the cooling towers. With indirect cooling, water vapor is evaporated from the non-contact fresh water that is recirculated through the cooling towers, and not from the contact process water. Due to the scaling tendencies of the various fluoride compounds, a portion of the condensed vapors from the flash coolers and evaporator condensing system would need to be blown down to the gypsum slurry system. Studies have shown that scaling tendencies and water balance implications make this alternative infeasible.

Simplot is currently investigating hybrid options somewhere between full indirect process water cooling and cooling ponds. This investigation is on-going.

4.1.4 Fluoride Process Condensate (FPC)

This process removes some of the fluoride from the process water circuit before it reports to the cooling towers. The FPC recovery system would consist of a fluoride recovery tower installed between the evaporator and barometric condenser, an FPC recirculation tank and pump, and a series of duct sprays. Preliminary studies show that the overall process is prohibitively expensive and a cooling pond would still be required.

Evaluation of these alternatives indicate that cooling ponds are the most efficient and economically feasible technology that would meet CO requirements. Under the proposed action, all cooling towers would be taken off line and replaced by cooling ponds.

4.2 Cooling Pond Site Locations

Simplot conducted a series of studies to assess pond size requirements that would allow for the full replacement of the cooling towers (Simplot 2018). The total required surface area for process water-cooling by ponds is approximately 70 to 90 acres, depending on design options, including using current gypsum stack ponds for cooling, blending tanks, and other related technologies. For planning purposes, 90 acres of surface area is assumed plus additional acreage for buffers around the ponds, access roads, and related infrastructure. The studies also included hydraulic calculations, pipeline sizing, and identified equipment necessary to transport process-cooling water from the phosphoric acid plant to each the new pond(s) and then pump the cooled water back to the process (closed loop system).

Simplot identified sites at or near the Don Plant with sufficient acreage to accommodate cooling pond(s). The sites included properties owned by Simplot, as well as sites owned by other private entities and BLM land. Site alternatives evaluated are illustrated in **Figure 4-1** and are identified as follows:

1. FMC – On top of capped pond areas
2. FMC – Previous FMC plant site
3. Simplot - Swanson Ranch east of plant
4. Private – Five parcels: 4A, 4B1, 4B2, 4C, 4D
5. BLM/Simplot - Canyon east of existing gypsum stack
6. Simplot – BAPCO farmland
7. Simplot - Gypsum stack
8. Simplot – Spanbauer farmland
9. Simplot - Overflow Pond area
10. Private - Rowland Property

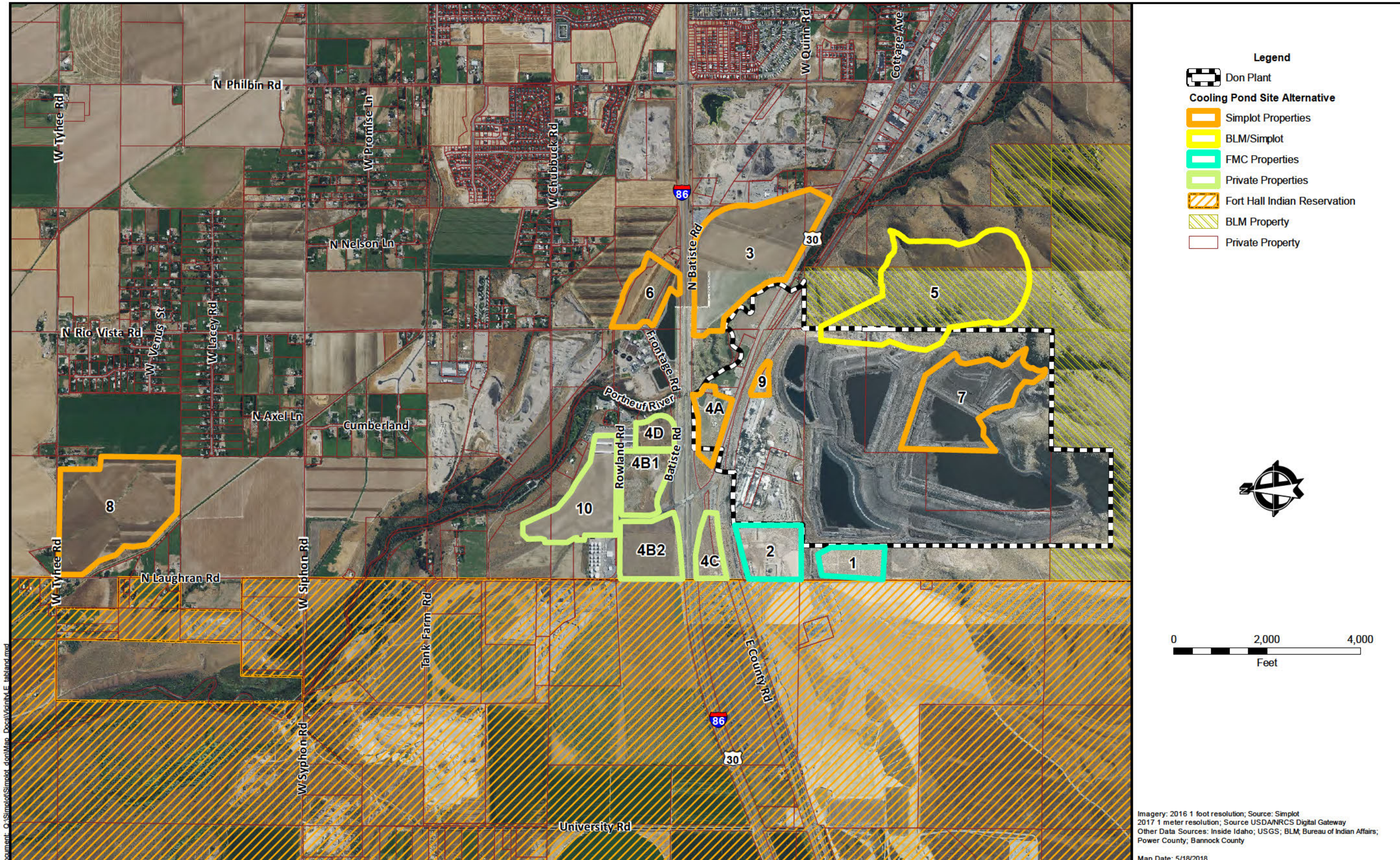


Figure 4-1. Alternatives for Cooling Ponds
Feasibility Study
Simplot Don Plant, Pocatello ID

Simplot used the following siting criteria to screen these 10 sites. A summary of site screening for each site is presented in **Table 4-1.**

- Acreage – The minimum requirement is 90 acres for pond(s) plus a buffer area between pond edge and the adjacent property. The rationale for the buffer (setback from property edge) is for fluoride deposition and safety (fog and ice on nearby public roads) (see sections 4.2.1 and 4.2.2 for further discussion). Quantitation for each alternative is acres.
- Constructability – Simplot evaluated depth to bedrock, depth to groundwater, and property topography (percent slope) as potential construction limitations. Constructability for each alternative was based on Natural Resource Conservation (NRCS) mapping for soil types and were classified as follows:

  Depth to bedrock limitation:

  - 0 to 6 feet – **high** – requires possible blasting and bedrock removal, or result in building large portion of pond above ground at higher costs
  - 6 to 10 feet – **moderate** – may require bedrock removal in some locations
  - More than 10 feet – **low** – assumes pond build with no bedrock removal

  Depth to groundwater limitation:

  - 0 to 6 feet – **high** – limits pond depth (desire to have liner minimum of 2 feet above high water table) and could require subsurface drain system
  - 6 to 10 feet – **moderate** – may require subsurface drain system or similar design
  - More than 10 feet – **low** – no limitation on pond liner design

  Slope limitation:

  - 8 percent or greater – **high** – larger cut/fill area, additional slope stability design requirements and costs
  - 4 to 8 percent – **moderate** – cut/fill requirements, additional design and costs (compared to flat areas but not as great a “high” category)
  - 0 to 4 percent – **low** – minimal limitation on pond design
- Distance from processing plant – Cooling water is circulated and must be pumped (or gravity flowed, if feasible) via piping to ponds and then pumped from ponds back to plant site. Thus, the greater the pond distance from the Don Plant, the greater the buried pipe length, pipe and pump size, and overall costs. Quantitation for each alternative is distance from pond to the phosphoric acid plant.
- Distance from residences – Cooling ponds are not compatible with residential areas due to steam (fog), fluoride emissions, and nuisances (e.g., noise from pumps and potential odors). In addition, the general area has zoning restrictions for industrial land uses versus residential uses that may limit site locations near residential developments. Quantitation for each alternative is the distance between the pond and nearest residential home (including trailer and RV parks).

- Public health/safety – Ponds could create fog and freezing ground conditions resulting in potential safety concerns for nearby public roads. See Section 4.2.1 for information on fog and ice assessment. Quantitation for each alternative is distance between the pond and nearest public road.
- Fluoride emissions - Ponds would have fluoride emissions but at levels lower than the cooling towers. In addition, fluoride dispersion and deposition would occur near the ponds. A buffer around the ponds is necessary and is desirable to be the same property ownership as the pond. Quantitation for each alternative is distance between pond and property boundary.

Table 4-1. Screening of Potential Cooling Pond Sites

Site	Location	Acres	Construction Limitations			Distances (feet) from Pond(s)[1]				Assessment
			Bedrock	GW[2]	Slope	Processing Plant	Residences	Public Road	Property Boundary	
1	FMC –On top of existing capped pond areas	23	Mod	Mod	High	2,900	5,500	1,825	75 (Fort Hall)	Only provides portion of land area required and would be combined with Site 2. Close proximity to Don Plant and relatively level; away from public roads, site used by FMC for ponds (now closed); land owned by FMC and adjacent to Fort Hall; questionable feasibly of placing on top of former FMC ponds; unknown environmental conditions and potential issues with FMC Superfund (EMF) closure.
2	FMC –Previous plant site	35	Low	Mod	Low	2,400	3,800	180	75 (Fort Hall)	Only provides portion of land area required and would be combined with Site 1. Close proximity to Don Plant and relatively level; close to public roads (fog and ice concern), owned by FMC and adjacent to Fort Hall; unknown environmental conditions and potential issues with FMC Superfund (EMF) closure.
3	Simplot – Swanson Ranch	98	Low	Mod	Low	3,600	500	300	100	Site currently used by Simplot for process water land application (permitted by IDEQ). Close proximity to residences, public roads, and property boundaries resulting in fog and ice, odor, and fluoride deposition concerns.
4	Private, parcels: 4A, 4B1, 4B2, 4C, 4D	99	Low	Mod	Low	2,700	600	75	25	Multiple private sites could involve up to 5 ponds. Close proximity to residences, public roads, and property boundaries resulting in fog and ice, odor, and fluoride deposition concerns. Land owned by others (private).
5	BLM/Simplot – Canyon east of existing gypsum stack	200	Mod	Low	High	3,100	3,800	2,200	1,100	Adjacent to gypsum stack and represents area that has greatest distance from residences, public roads and property boundaries; so provides the greater public safety and less impacts to off-site properties for fluoride emissions. In steep terrain, more difficult and costly to build compared to sites in valley. Land ownership currently Simplot and federal (BLM). This is the proposed action site presented in Section 3.
6	Simplot – BAPCO farmland	65	Low	Low	Mod	3,500	1,500	325	25	Acreage is limiting for pond and buffers. Site currently used by Simplot for process water land application (permitted by IDEQ). Close proximity to residences, public roads, and property boundaries resulting in fog and ice, odor, and fluoride deposition concerns. Land owned by Simplot.
7	Simplot - gypsum stack	100	Low	Low	Low	1,700	5,200	2,100	2,000	Would require lined pond on top of gypsum stack operations and would result in reduction in gypsum stack storage area and reduce life of Don Plant. Land owned by Simplot.
8	Simplot – Spanbauer farmland	95	Low	Low	Low	12,000	425	25	50	Greatest distance from Don Plant of sites evaluated, thus costs of piping and pumping would be higher than others. Site currently used by Simplot for process water land application (permitted by IDEQ). Close proximity to residences, public roads, and property boundaries resulting in fog and ice, odor, and fluoride deposition concerns. Land owned by Simplot.
9	Simplot Overflow pond area	25	Low	Mod	Low	650	4,100	350	300	At Don Plant and would represent shortest distance for pumping but there is not sufficient area available given the current pond configurations and the addition of the two new decant ponds. Also, closer to public roads and property boundaries compared to Site 5.
10	Rowland Property	54	Low	Mod	Low	3,400	450	50	50	Relatively close to site but close proximity to residences, public roads, and property boundaries resulting in fog and ice, odor, and fluoride deposition concerns. Land owned by others (private).

[1]See Section 4.2 for description of limitations.
[2]GW = groundwater.

4.2.1 Fog and Ice Assessment

Cooling ponds can create fog, and during winter months, this fog can create icy conditions on nearby surfaces. Thus, placing ponds too close to public roadways can create unsafe driving conditions and reduce driver visibility. As presented in **Table 4-1** and illustrated in **Figure 4-1**, several sites are in close proximity of public roads (Idaho State Highway 30 [Hwy 30] and Interstate 86 [I-86]).

To understand potential fogging and icing conditions associated with cooling ponds, Simplot contracted with Ramboll Environ US Corporation to conduct a screening level analysis for fog and ice formation for two locations (Environ 2018):

- A pond located in the Portneuf River valley that corresponds to site 4A (**Figure 4-1**). This site is representative of the pond sites at lower elevation in the valley area that are near public roadways (sites 2, 3, 4, 6, 8, 9, and 10 listed in **Table 4-1**).
- Site 5, the proposed action that has two ponds constructed at higher elevation and east of the gypsum stack.

Environ used the air dispersion model (AERMOD) to estimate airborne water concentrations and predict fog formation on a grid network around the pond. They ran the model on an hourly basis over a 1-year period using area-specific meteorological conditions. Findings of the study include the following (Environ 2018):

- The frequency of fog formation would be about the same for both sites given that pond surface area and water temperatures are similar.
- The key safety factor is fog formation on public roadways, which is a function of distance of ponds to public roads.
- Environ predicted the frequency for fog to migrate to Hwy 30 and I-86:
    - <u>Site 4A (in valley area)</u>: 800 hours of fog per year on parts of Hwy 30 and 200 hours of fog per year on I-86. For Hwy 30, 200 hours of the total 800 hours of fogging conditions would be when temperatures are below freezing; thus, potential for icing conditions on the roadway.
    - <u>Site 5 (east canyon ponds)</u>: 20 hours of fog per year on parts of Hwy 30 and 10 hours of fog per year on I-86. For Hwy 30, approximately 5 hours out of 20 hours of fogging would occur when temperatures are below freezing (icing conditions).
- In summary, fog formation over public roads for Site 4A, and other sites near public roads (sites 2, 3, 4, 6, 8, 9, and 10 listed in **Table 4-1**), would result in fog formation frequency of up to 40 times greater compared to the proposed east canyon ponds.

4.2.2 Fluoride Emissions

Simplot's objective in removing the cooling towers in favor of cooling ponds is to reduce fluoride emissions to the atmosphere and associated deposition on downwind (off-site) areas. Cooling ponds would also result in fluoride emissions, but dispersion and deposition is localized compared to cooling towers.

Table 4-2 summarizes fluoride emissions from the cooling towers from 2013 through 2017 and compares this to estimated emissions for a 90-acre cooling pond. In summary, the cooling ponds results in approximately 1/3 of the cooling towers emissions.

Table 4-2. Fluoride Emissions for Cooling Towers between 2013 and 2017 compared to Estimate Emissions from Cooling Pond.

Year	Fluoride Emission Cooling Towers (Tons/year)
2013	103.13
2014	87.58
2015	77.76
2016	67.29
2017	61.08
Estimated Fluoride Emissions from Cooling Pond	26.3

4.2.3 Conclusions for Cooling Pond Site

Table 4-1 summarizes 10 potential areas for the cooling ponds. Sites (2, 3, 4, 6, 8, 9, and 10) are located in the Portneuf Valley area (lower elevations), and/or across I-86, and are in close proximity to residences, public roads, and/or property boundaries resulting in fog and ice, odor, and fluoride deposition concerns. As illustrated from the modeling discussed in sections 4.2.1 and 4.2.2, these sites present greater safety risks for fog and icing on nearby public roads, and also present fluoride emission concerns because of proximity to receptors. Site 5 (east canyon area) is further away from public roads, residences, and property boundaries compared to the other sites (except for Site 7, gypsum stack, which is not a feasible location because it would result in reducing the life of gypsum stack operations). Thus, Site 5 provides for greater public safety compared to the other sites. Furthermore, this site is within the EMF area of influence in that it currently has elevated levels of fluorides in soils and vegetation. Adding cooling ponds to this area would continue to limit fluoride emissions to an already impacted area. Site 5 (east canyon area) is the recommended proposed action.

4.3 Gypsum Stack

In addition to the proposed action described in Section 3.2 of expanding the gypsum stack to the east, south, and west canyon areas, Simplot considered other reasonable alternatives for gypsum stack expansion, including other lands in the area that could serve for disposal of the gypsum by-product as well as assessing the ability to continue to build up on the existing gypsum stack. Regarding the latter, Simplot has maximized gypsum stack storage on the current Don Plant site through implementing the gypsum stack expansion project (phases 1 to 6) described in Section 2.3.1. The only reasonable alternative is to expand off site. In addition to the east, south, and west canyon areas (described as proposed actions in Section 3), Simplot has evaluated the adjacent FMC property.

4.3.1 No Action Alternative

In order to ensure uninterrupted operation of the facility at current production rates, Simplot must expand by adding land to receive gypsum. Under the no action alternative, no additional land would be obtained. Failure to obtain additional land for a suitable storage site would mean Simplot would have to reduce production rates or even cease production altogether at the Don Plant. A shutdown would be hugely detrimental to the region's economy. The economic impacts of ore processing and mining include the following:

- For southern Idaho, mining employees 6,900 persons and generates approximately $79 million dollars in tax revenue (Peterson 2015).
- Mine-related processing (such as the Don Plant) generates about 5,000 jobs in Idaho and results in approximately $55 million in tax revenue (Peterson 2015).
- For 2016, the Don Plant directly employed over 600 persons at Smoky Canyon Mine and the Conda Pump station. Additionally, contractors, venders, and other businesses rely on Simplot operations for revenue.

4.3.2 Adjacent FMC Property

Simplot evaluated an alternative that would acquire portions of the adjacent FMC property for gypsum by-product disposal. Most of the FMC property is contained within the Fort Hall Indian Reservation; therefore, purchasing land in this area would require authorization from the Shoshone Bannock Tribes. This area is also included in the Eastern Michaud Flats Superfund site within the FMC operational area. Proposing to permanently dispose of phosphogypsum in this area under the current regulatory closure scenario and land ownership challenges is not a reasonably feasible scenario.

4.3.3 Vertical Expansion of Existing Main Gypsum Stack

In this scenario, gypsum would continue to grow vertically, stepping up at a 3:1 slope on the east, west, and north faces (as required) with the goal of keeping the stack on Simplot property. Vertical growth is restricted by the slope stability of the main stack system, which includes adequate factors of safety. The gypsum stack engineer of record (Ardaman & Associates, Inc.) has stated that the main stack can be raised to 5,100 feet elevation and still maintain slope stability with an adequate factor of safety (this is based on experience with the Don Plant stack system). An updated detailed stability analysis is being conducted to verify this assumption.

Assuming stability calculations deemed the stack system stable enough to support continued growth above 5,100 feet, operations of the system become extremely challenging as the stack is vertically raised. Raising the stack sloping inward on all sides results in a diminishing top (main compartment) area, which drives the water levels up at an increasing rate. This results in the need to raise perimeter dikes at increased rates to keep above the rising water levels, and thus drives the stack to the end of its life faster. Reduced ponded acres makes it more difficult to build utilizing rim ditching alone, as the cells used for build/borrow material do not have sufficient time to dry before another dike raise is required. This requires supplementing dike build with gypsum material mined and hauled from an onsite borrow, the source of which is very limited with a nearly fully lined facility. Another issue with continued growth above 5,100 feet is pumping and distributing slurry to that height. Current pump systems (East and West Booster

Stations) are capable of lifting slurry to 5,000 feet, and with modification can raise to 5,100 feet. To go higher than that, additional pump stations will need to be constructed, further complicating operations from not only a production standpoint but also from and environmental and safety risk perspective. For these reason, raising the stacks above the 5,100 foot elevation within the Simplot property is not feasible for long-term operations.

4.3.4 South, East, and West Canyon Areas

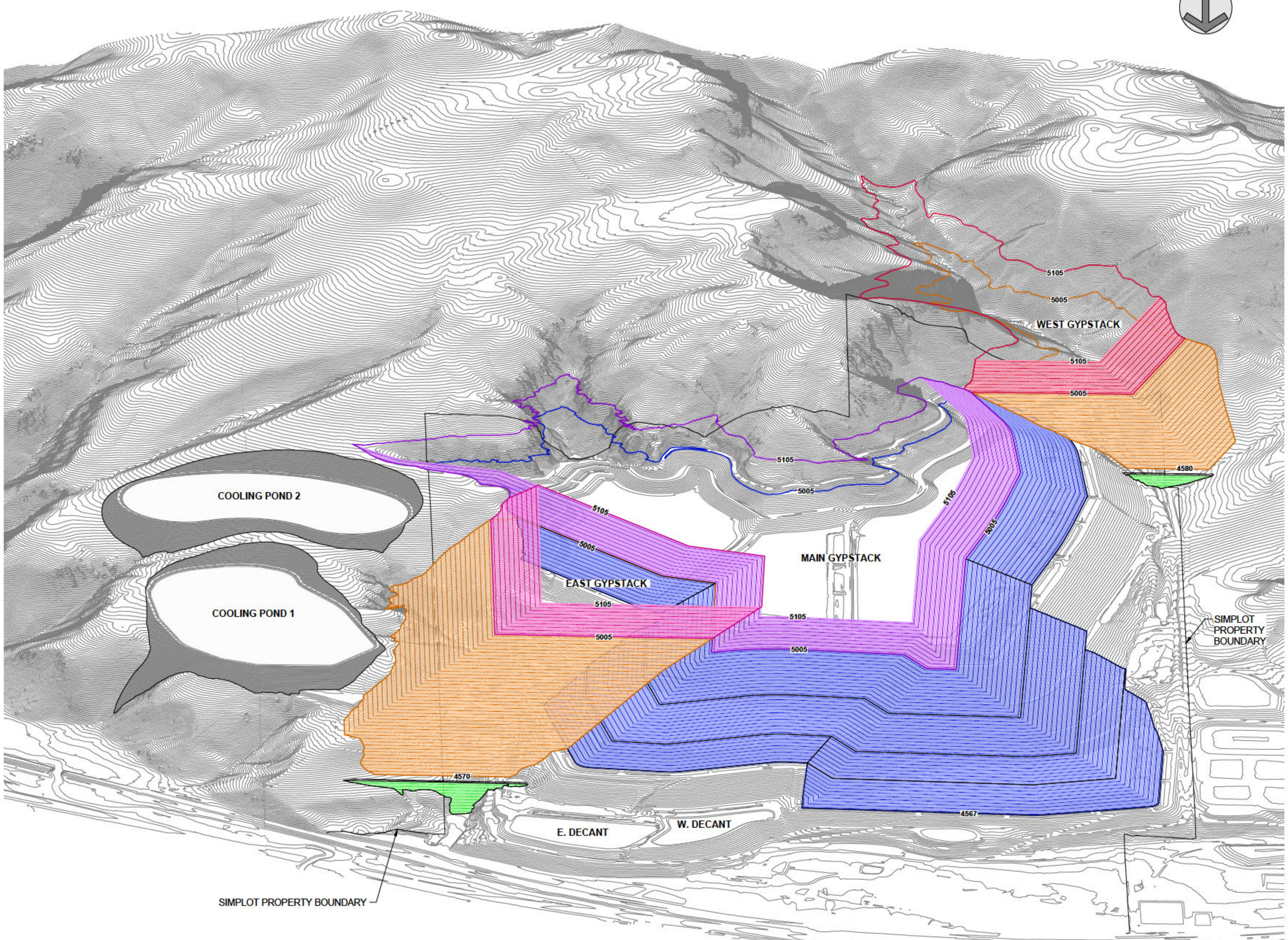
As described in Section 3, the proposed action is to expand the gypsum stack to adjacent lands (portions of which include BLM land). This allows for the integration of the existing gypsum stack system, allowing for optimization of storage, water management, and the sharing of existing lined infrastructure (e.g. lined decant ponds would remain in place).

4.3.5 Off-site Expansion Requirements

Since 2011, Simplot has expanded its gypsum operations and added lined compartments for receiving gypsum, leachate collection systems, and lined decant ponds. This design, construction, and operational experience has provided Simplot important information and experience useful for expanding the gypsum stack operations onto off-site land such as the proposed south and east canyon areas, including: (1) the amount of waste that would be stored in the canyon south of the Don Plant; (2) preparation needed for waste storage; (3) the type of liner; (4) installation of the liner in the canyon terrain; and (5) information related to groundwater flows under the canyon.

Figure 4-2 illustrates the gypsum stack buildout and provides a volume estimate table. Preparation of the canyon is described in Appendix B. Also see Appendix B for liner type (60-mil HDPE) and an overall description of gypsum stack development and liner installation.

The gypsum stack would be lined and there would be a leachate collection system; therefore, the gypsum stack system would meet Idaho’s Groundwater Quality Rules. The Don Plant groundwater system has been extensively studied and baseline data is available on groundwater quality.



VOLUME TABLE	
MAIN GYPSTACK - ELEVATIONS 4567 TO 5005	
2D AREA	16,596,527 SQ. FT.
CUT	78,000 CU. YDS.
FILL	59,264,471 CU. YDS.
NET <FILL>	59,186,471 CU. YDS.
MAIN GYPSTACK - ELEVATIONS 5005 TO 5105	
2D AREA	9,304,495 SQ. FT.
CUT	565 CU. YDS.
FILL	26,879,774 CU. YDS.
NET <FILL>	26,879,210 CU. YDS.
EAST CANYON - ELEVATIONS 4570 TO 5005	
2D AREA	4,972,553 SQ. FT.
CUT	81 CU. YDS.
FILL	26,311,224 CU. YDS.
NET <FILL>	26,311,143 CU. YDS.
EAST CANYON - ELEVATIONS 5005 TO 5105	
2D AREA	2,812,176 SQ. FT.
CUT	0 CU. YDS.
FILL	7,021,789 CU. YDS.
NET <FILL>	7,021,789 CU. YDS.
WEST CANYON - ELEVATIONS 4780 TO 5005	
2D AREA	2,839,558 SQ. FT.
CUT	1,556 CU. YDS.
FILL	8,411,244 CU. YDS.
NET <FILL>	8,409,688 CU. YDS.
WEST CANYON - ELEVATIONS 5005 TO 5105	
2D AREA	2,780,021 SQ. FT.
CUT	464 CU. YDS.
FILL	7,352,681 CU. YDS.
NET <FILL>	7,352,217 CU. YDS.

NO.	REVISIONS	BY	DATE

DRAWN: CKL | CHECKED: BGW
DESIGNED: — | APPROVED: SJL
CAD NAME: | SCALE: (Based on 11"x17" sheet) NOT TO SCALE

KELLER associates
131 SW 5th Avenue, Suite A
Meridian, Idaho 83642
(208) 288-1992

Simplot
AGRIBUSINESS GROUP POCATELLO, IDAHO

Figure 4-2. Gypsum Stack Buildout

MAXIMIZED EAST CANYON - SOUTH VIEW

PROJECT NO. 212108
SHEET NO. 4

5 Summary and Recommendations

5.1 Cooling ponds

Site 5 (east canyon cooling ponds) is the preferred site for cooling ponds. Section 3.1 describes this site and its cooling pond implementation. Site 5 is further away from public roads, residences, and property boundaries compared to the other sites evaluated (except for Site 7 (gypsum stack) which is not a feasible location because it would result in reducing the life of gypsum stack operations), and as a result, provides for greater public safety (e.g., less fog and ice formation on public roads). The cooling ponds provides for reduced fluoride emissions compared to the cooling towers and adding cooling ponds to the Site 5 area would continue to limit fluoride emissions to an already impacted area for historic Don Plant and FMC activities. Based on this rationale, Site 5 (east canyon area) is the recommended proposed action.

5.2 Gypsum Stack

While Simplot evaluated the FMC/Fort Hall property area for potential future gypsum stack operations, and evaluated the feasibility of growing the stack vertically on private property, the evaluation results indicated that to be economically and operationally feasible, Simplot's storage area should be located as close as possible to their existing fertilizer processing plant, but off-site storage is needed. The east, west, and south canyon areas are adjacent to existing operations, which allows for the integration of the existing gypsum stack system, optimizing storage, water management, and sharing infrastructure (e.g., lined decant ponds would remain in place). For these reasons, expansion of the current permitted lined gypsum stack operations to the east, west, and south canyon areas is the recommended proposed action.

5.3 Summary of Land Expansion Needs

Figure 3-3 summarizes the overall BLM land disturbance footprint with buffers accounting for access, infrastructure and setbacks. **Table 3-1** and **Table 3-2** provide acreage estimates; overall, the BLM footprint is 277 acres. As illustrated in **Figure 3-3**, a portion of BLM north of the proposed cooling ponds becomes isolated (not accessible and surrounding by private land); therefore, it may be reasonable to include that land in a land sale, exchange, or lease.

6 Literature Citation

Ardaman & Associates, Inc. 2017. *General Design and Construction Techniques for Gypsum Stack Expansion*.

Environ [Ramboll Environ US Corporation]. 2018. *Cooling Pond Modeling Analysis. Simplot Don Plant*.

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Keller [Keller Associates]

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2017b. *Gyp Stack Growth Model, Task 2; Volume Life of Gyp Stack to Elevation 5005*.

2017c. *Gyp Stack Growth Model, Task 3; Initial Build Configuration of the East and West Canyons*.

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2018. *Cooling Pond Conceptual Design. Simplot Don Plant. Pocatello, Idaho, February 2018*.

A

Cooling Ponds Concept Design

Cooling Pond Concept

Prepared by J.R. Simplot Company

May 10, 2018

Table of Contents

Figures

Attachments

1 Process Water Cooling Operations

1.1 Phosphoric Acid Production

Phosphate fertilizer is produced by first reacting phosphate ore with sulfuric acid. This exothermic reaction produces phosphoric acid in a concentration ranging from 26 to 32 percent, as well as a di-hydrate calcium sulfate solid (phosphogypsum). Elemental constituents (e.g., fluoride (F), calcium (Ca), aluminum (Al), iron (Fe), magnesium (Mg), and, silica (Si)) naturally present in the ore are found in the phosphoric acid and phosphogypsum in varying levels. The heat produced in the reaction is removed by flash cooling the phosphoric acid under a slight vacuum and by an air sweep over the reaction vessel. The vapors from the flash cooler are condensed in a direct contact heat exchanger (barometric condenser) and the vapors from the reaction vessel air sweep are partially condensed and cleaned of pollutants in a cross-flow scrubber.

The dilute phosphoric acid from the reaction system is subsequently concentrated through evaporation to achieve required concentrations for processing into various fertilizer or industrial products. The evaporation occurs under a slight vacuum in forced circulation evaporation units using steam. As water is removed from the phosphoric acid, more volatile components (mostly fluoride compounds) as well as small amounts of liquid entrainment are also present in the vapor. The vapor stream from the evaporators is condensed using direct contact heat exchangers (barometric condensers). The direct contact heat exchange requires large circulating flows and results in the cooling medium containing various compounds present in the phosphoric acid that either volatilize or carry over in liquid droplets with the water vapor to be condensed.

Most of the heat load from the phosphoric acid plant is removed using cooling towers, with a portion of the heat load removed using the phosphogypsum stack system. Emissions from cooling towers include both vapor and liquid (entrainment /drift losses).

1.1.1 Phosphogypsum

The phosphogypsum produced in the reaction system is removed from the phosphoric acid using filtration. The phosphogypsum filter cake is sluiced with water and pumped to the lined gypsum stack for storage. The stack allows for the phosphogypsum to settle out, and the transport water is captured and returned to the production plant for reuse.

1.1.2 General Water Balance

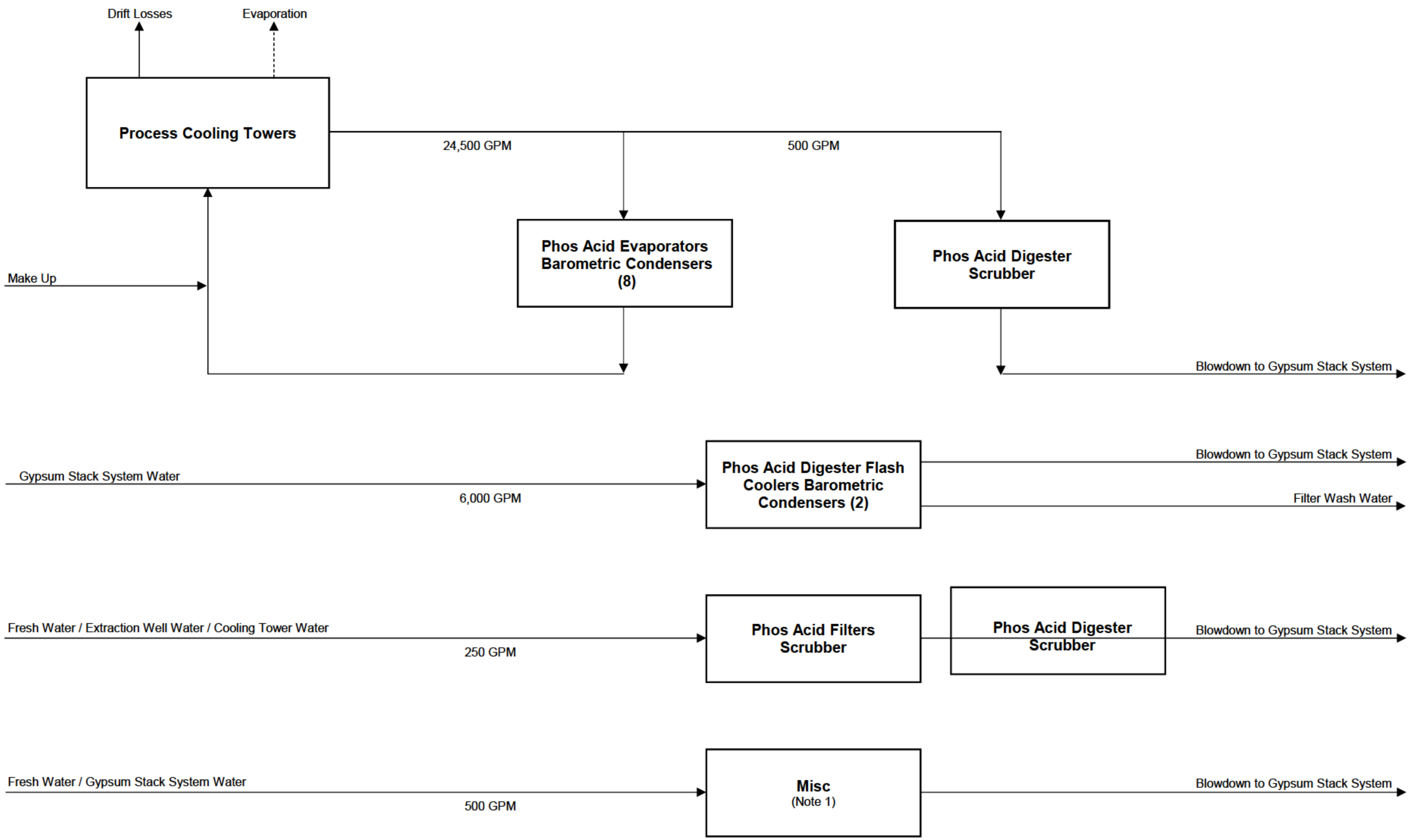
A general process flow diagram and water balance for current operations is presented in **Figure 1.** Water input into the system comes from fresh water (on-site wells), extraction well water, and from the slurried phosphate ore piped to the Don Plant from Simplot's Smoky Canyon Mine in southeast, Idaho.

2 Cooling Pond Concept

Simplot entered into a CO with IDEQ (Case No. E-2012.0022) requiring that Simplot reduce fluoride emissions from the Don Plant by either replacing the existing reclaim cooling towers with a low emission alternative or incorporating measures that provide for greater than 50 percent fluoride emissions reductions from the reclaim cooling towers with demonstration of compliance with the fluoride in forage standards. Simplot has conducted an assessment of alternatives and found that using lined cooling pond(s) to remove the heat load from the phosphoric acid plant is the preferred approach to meet the CO requirements. Simplot would transfer the process cooling water to cooling pond(s), where water would be cooled and then pumped back to the cooling system for reuse.

Simplot would construct at least two ponds (cooling ponds 1 and 2) to the east of the gypsum stack (Attachment A). The area required for the cooling ponds (disturbance area including cut and fill) is approximately 80 to 100 acres. The range in area is due to potential design options, including using current gypsum stack ponds for cooling, blending tanks, and other related technologies. For planning purposes, 100 acres of pond disturbance area is assumed plus additional acreage for buffers around the ponds, access roads, and related infrastructure.

Figure 2 presents a process flow diagram and water balance illustrating the conceptual cooling pond system. Ponds 1 and 2 would be located on both Simplot and BLM land as presented in Attachment A. Simplot evaluated other potential locations for the ponds and has determined that the proposed location (shown in Attachment A) is the most feasible (see Feasibility Study report, Simplot 2018).



Notes:

1. Miscellaneous minor streams (vacuum pump seal water, pump seal water, etc…)

Simplot

AGRIBUSINESS GROUP POCATELLO, ID

REFERENCES NO.	DESCRIPTION

REVISIONS NO.	BY	DATE	DESCRIPTION	NO.	BY	DATE	DESCRIPTION

	RESP	DATE
DRAWN BY:		
DESIGNED BY:		
CHECKED BY:		
APPROVED BY:		

Phosphoric Acid Plant

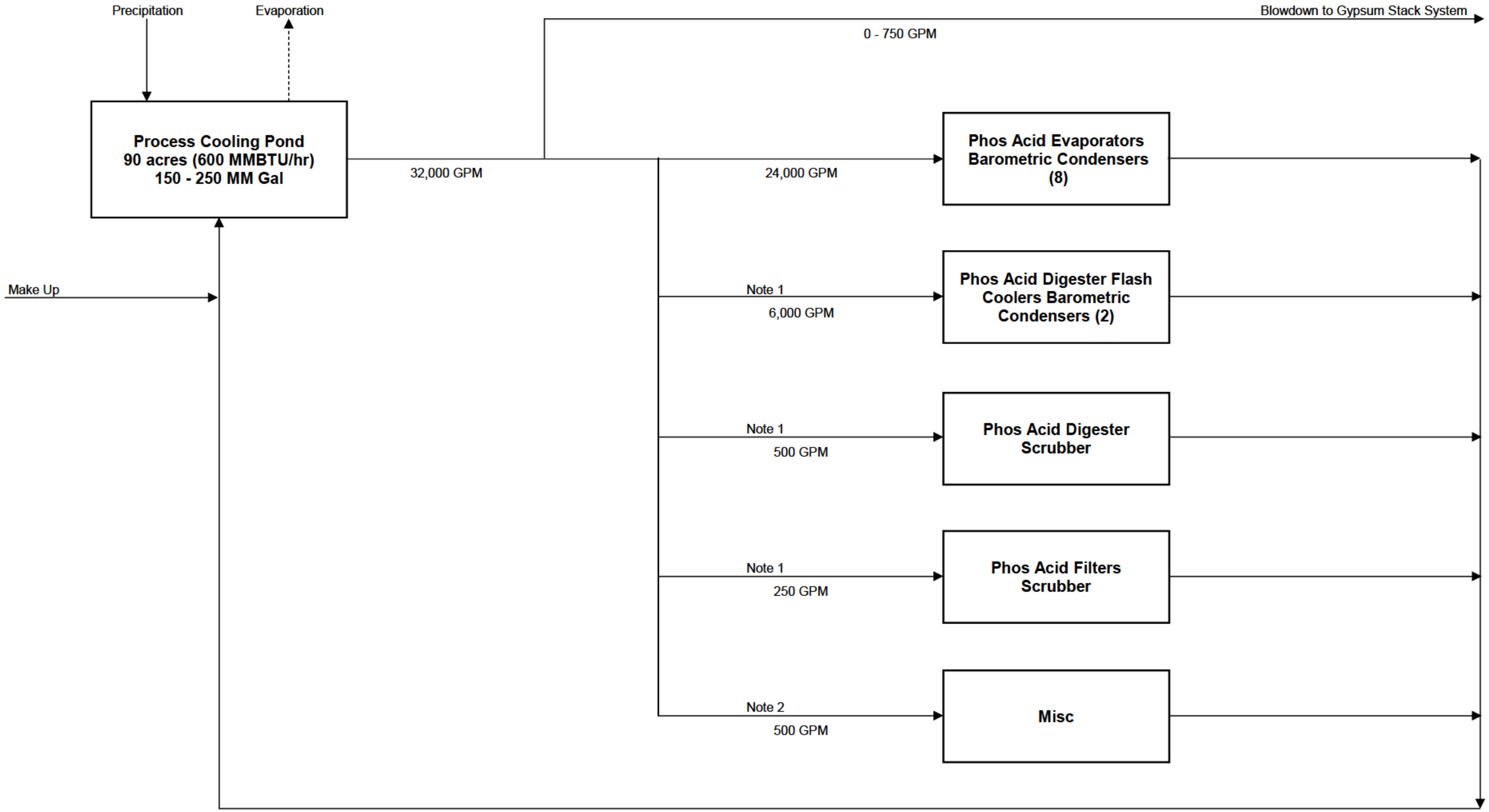
Process Cooling System (Existing)

Block Flow Diagram

Figure 1

SCALE: None

Revision



Notes:

1. Currently part of Gypsum Stack System; heat load may be relocated to Cooling Pond depending on Process requirements

2. Miscellaneous minor streams (vacuum pump seal water, pump seal water, etc…)

Simplot

AGRIBUSINESS GROUP POCATELLO, ID

REFERENCES NO.	DESCRIPTION

REVISIONS NO.	BY	DATE	DESCRIPTION	NO.	BY	DATE	DESCRIPTION

	RESP	DATE
DRAWN BY:		
DESIGNED BY:		
CHECKED BY:		
APPROVED BY:		

Phosphoric Acid Plant

Process Cooling Pond System (Proposed)

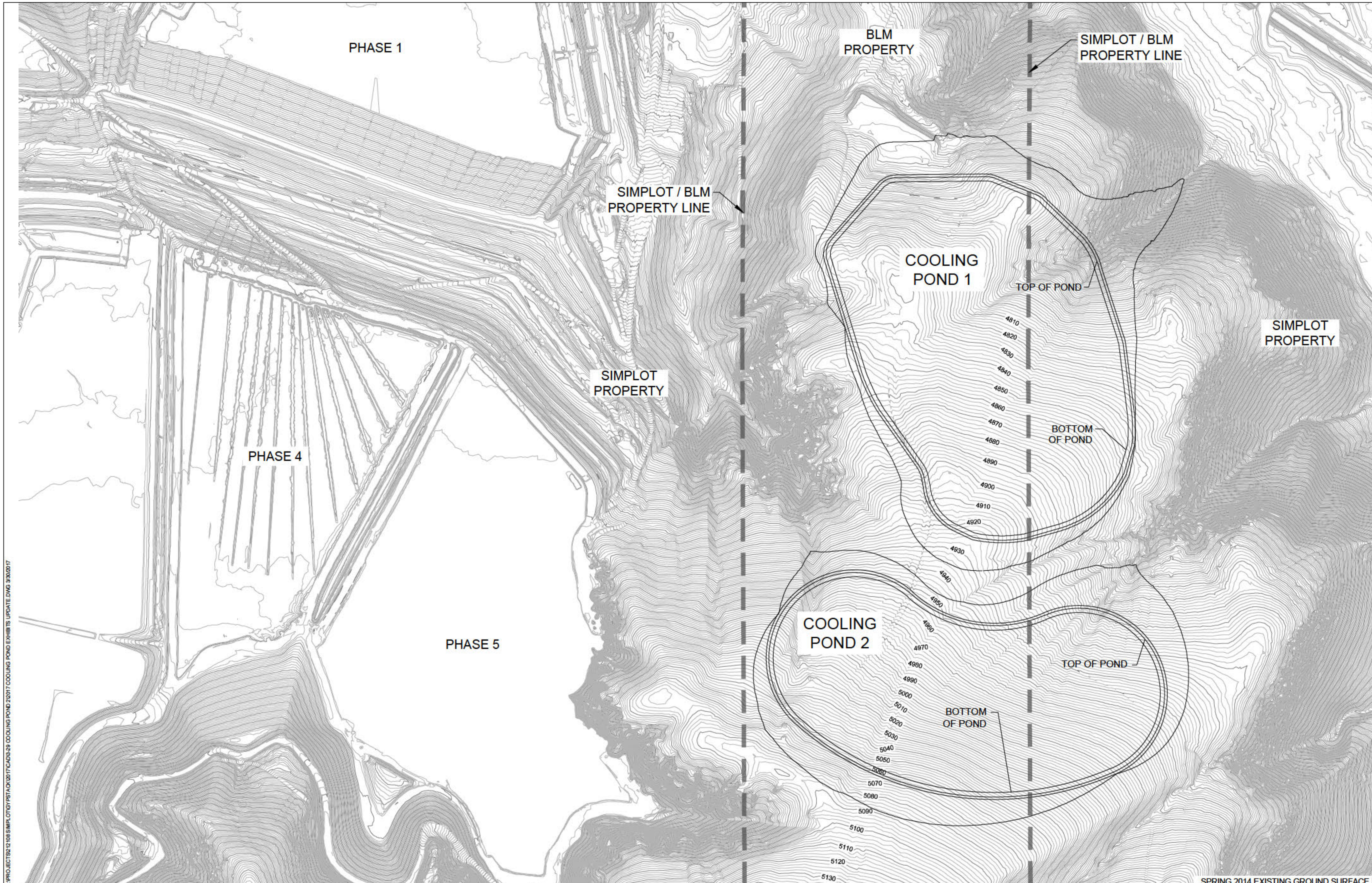
Block Flow Diagram

Figure 2

SCALE: None

Revision

ATTACHMENT A:
Conceptual Design



NO.	REVISIONS	BY	DATE

DRAWN: CKL
CHECKED:
DESIGNED: SJL
APPROVED: SJL
CAD NAME:
SCALE: AS NOTED

KELLER associates
305 N. 3RD AVENUE, SUITE A
POCATELLO, IDAHO 83201
(208) 238-2146

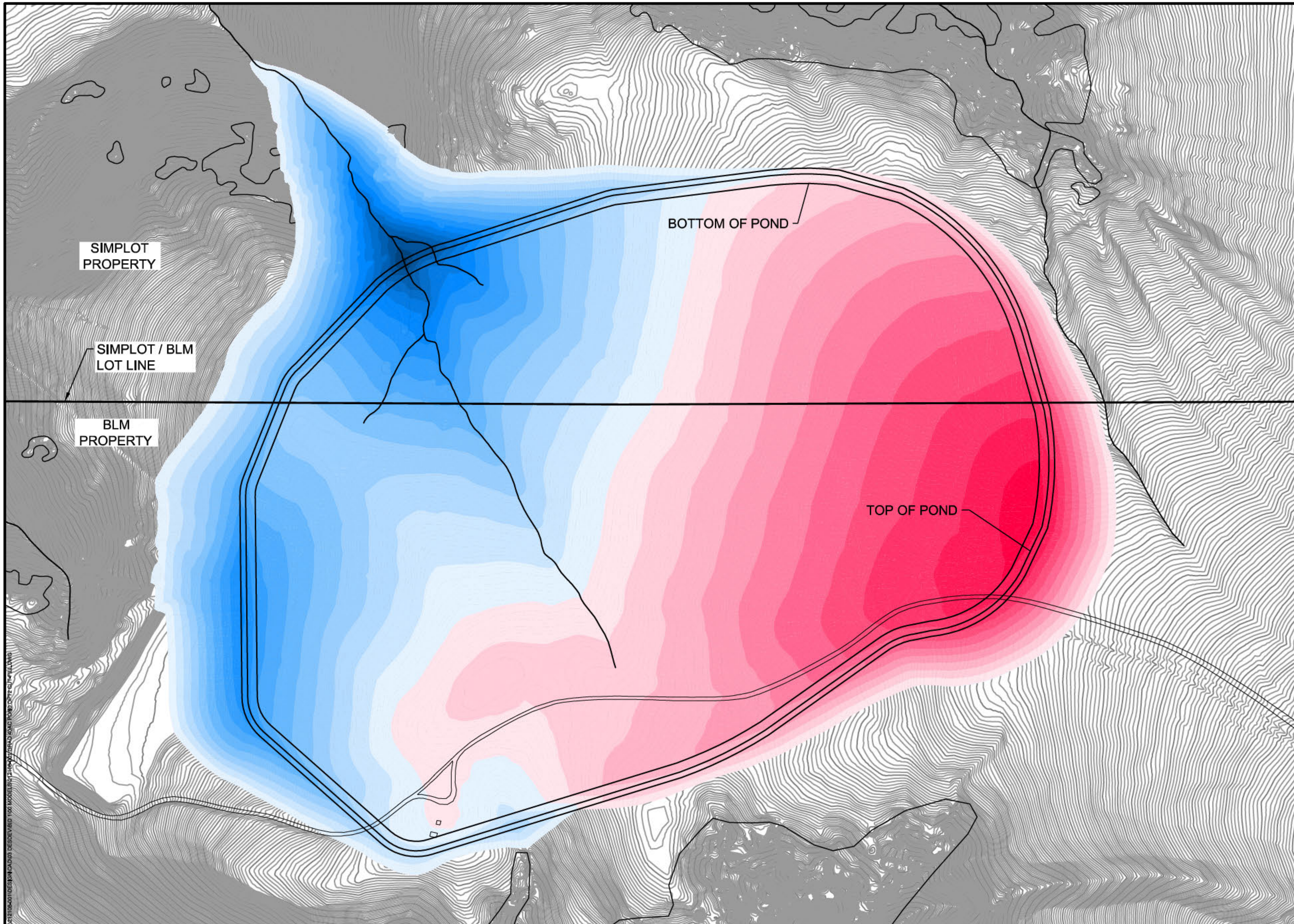
Simplot

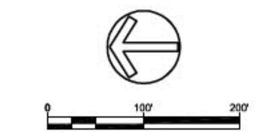
SIMPLOT COOLING PONDS

TOPOGRAPHY AND BOUNDARIES

PROJECT NO. 212108-001

SHEET NO. 1





COOLING POND	
SIZE	40 ACRES
TOP ELEVATION	4837.40 FT
BOTTOM ELEVATION	4827.40 FT
OUTSIDE SLOPE	1.5:1 SLOPE
INSIDE SLOPE	2:1 SLOPE

CUT - FILL SUMMARY	
2D AREA	2,320,287.68 SQ. FT.
CUT	1,564,881.51 CU. YD.
FILL	1,564,208.93 CU. YD.
CUT / FILL NET	672.58 CU. YD.
MIN. CUT ELEVATION	-97.72 FEET
MAX. CUT ELEVATION	151.57 FEET

ELEVATIONS TABLE

Minimum Elevation (Depth of Cut / Fill in Ft.)	Maximum Elevation (Depth of Cut / Fill in Ft.)	Color
-100.00'	-90.00'	
-90.00'	-80.00'	
-80.00'	-70.00'	
-70.00'	-60.00'	
-60.00'	-50.00'	
-50.00'	-40.00'	
-40.00'	-30.00'	
-30.00'	-20.00'	
-20.00'	-10.00'	
-10.00'	0.00'	
0.00'	10.00'	
10.00'	20.00'	
20.00'	30.00'	
30.00'	40.00'	
40.00'	50.00'	
50.00'	60.00'	
60.00'	70.00'	
70.00'	80.00'	
80.00'	90.00'	
90.00'	100.00'	
100.00'	110.00'	
110.00'	120.00'	
120.00'	130.00'	
130.00'	140.00'	
140.00'	150.00'	
150.00'	160.00'	

NO.	REVISIONS	BY	DATE

DRAWN: TD / CKL	CHECKED:
DESIGNED: SJL	APPROVED: SJL
CAD NAME:	SCALE: AS NOTED

KELLER associates
131 SW 5th Avenue, Suite A
Meridian, Idaho 83642
(208) 288-1992

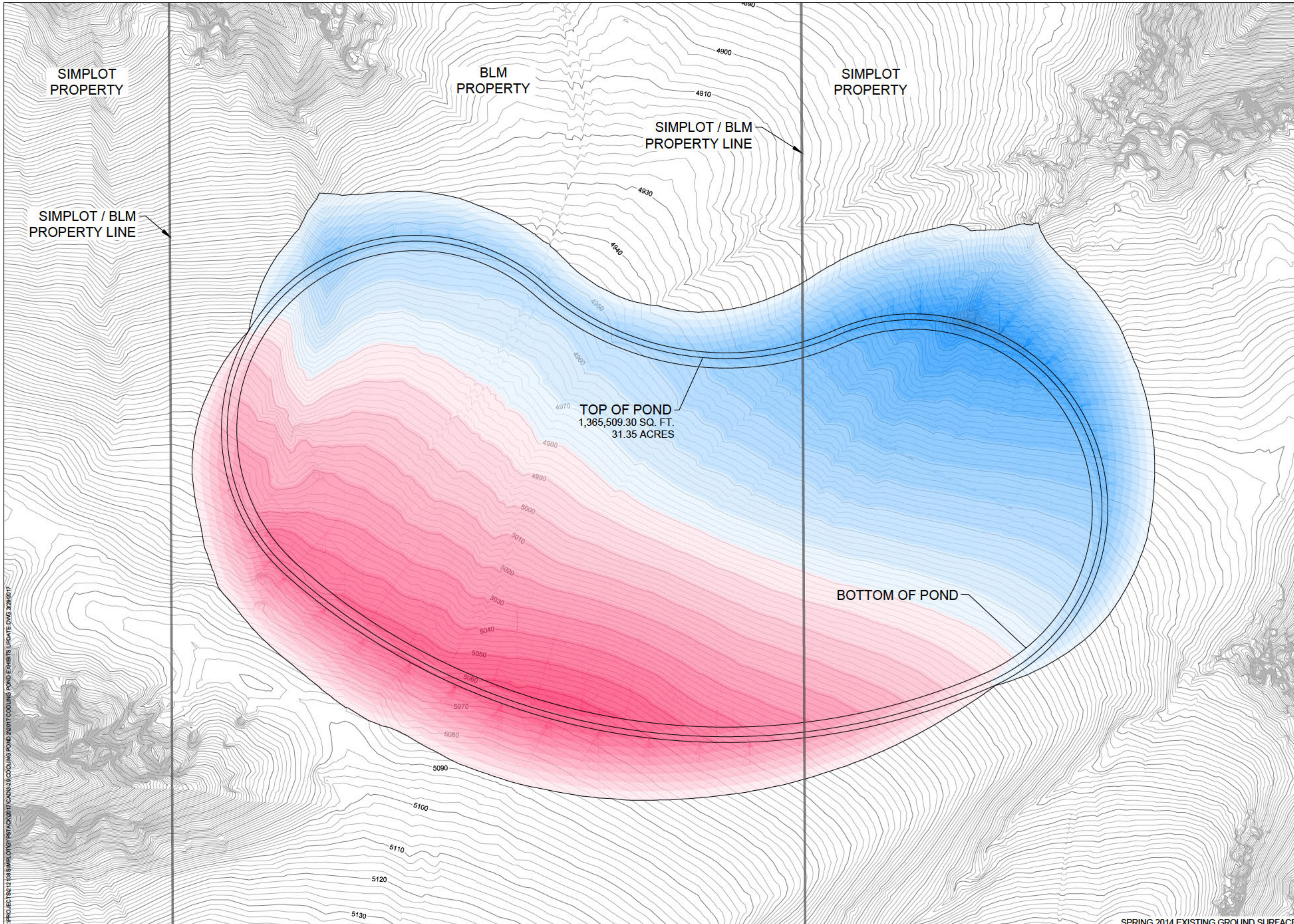
Simplot

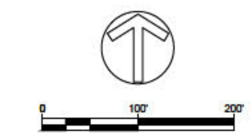
SIMPLOT COOLING PONDS

COOLING POND CUT - FILL PLAN

PROJECT NO. 212108-001

SHEET NO.





COOLING POND	
SIZE	31.35 ACRES
TOP ELEVATION	4989.20 FT
BOTTOM ELEVATION	4979.20 FT
OUTSIDE SLOPE	1.5:1 SLOPE
INSIDE SLOPE	2:1 SLOPE

CUT - FILL SUMMARY	
2D AREA	1,931,892.25 SQ. FT.
CUT	1,208,185.43 CU. YD.
FILL	1,212,711.48 CU. YD.
CUT / FILL NET	4,526.06 CU. YD. (FILL)
MIN. CUT ELEVATION	-84.60 FEET
MAX. CUT ELEVATION	114.21 FEET

ELEVATIONS TABLE

Minimum Elevation (Depth of Cut / Fill in Ft.)	Maximum Elevation (Depth of Cut / Fill in Ft.)	Color
-100.00'	-90.00'	
-90.00'	-80.00'	
-80.00'	-70.00'	
-70.00'	-60.00'	
-60.00'	-50.00'	
-50.00'	-40.00'	
-40.00'	-30.00'	
-30.00'	-20.00'	
-20.00'	-10.00'	
-10.00'	0.00'	
0.00'	10.00'	
10.00'	20.00'	
20.00'	30.00'	
30.00'	40.00'	
40.00'	50.00'	
50.00'	60.00'	
60.00'	70.00'	
70.00'	80.00'	
80.00'	90.00'	
90.00'	100.00'	
100.00'	110.00'	
110.00'	120.00'	
120.00'	130.00'	
130.00'	140.00'	
140.00'	150.00'	
150.00'	160.00'	

NO.	REVISIONS	BY	DATE

DRAWN: CKL	CHECKED:
DESIGNED: SJL	APPROVED: SJL
CAD NAME:	SCALE: AS NOTED

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Simplot

SIMPLOT COOLING PONDS

COOLING POND 2 CUT - FILL PLAN

PROJECT NO. 212108-001

SHEET NO. 1

B

Gypsum Stack Design Concepts

Gypsum Stack Design Concepts

Don Plant, J.R. Simplot Company

Pocatello, ID

November 28, 2017

Table of Contents

Figures

Photos

1 Design Concepts

1.1 Typical Design

Through the various phases of lining and expansion projects undertaken at its Don Plant since 2008, J.R. Simplot Company (Simplot) has gained key design, construction, and operational experience for stack construction and lined gypsum stack operations (Simplot 2015), which can be applied to the proposed gypsum stack expansion into the south and east canyon areas. The following paragraphs summarize anticipated design and construction activities for this expansion.

Figure 1-1 presents a typical gypsum stack design cross-section for those portions of the lined gypsum stack vertical expansion that are constructed on top of the existing gypsum deposits (Ardaman and Associated 2017). The design includes a compacted gypsum perimeter containment dike and prepared gypsum subgrade (compacted, firm and smooth graded surface) that is covered with a textured 60-mil HDPE liner. A compacted gypsum starter dike and inner dike associated with operation of the gypsum slurry rim ditch distribution system are placed on top of the liner, as are three concentric stabilization underdrains that are provided beneath the perimeter slope of the future gypsum stack. Figure 1-2 also provides a typical design cross section for lateral expansions of the gypsum storage facility, beyond the exterior limits of the existing facility, where the HDPE bottom liner will be founded on natural ground surface. Depending on the particular site geometry, the height of perimeter earthen containment dike and initial starter dike for the gypsum stack may vary.

Photo 1-1 through **Photo 1-4** are construction photographs of the Don Plant phase 6 gypsum stack lateral expansion showing various stages of the earthen perimeter dike construction, site preparation, and lining of the exposed north wall slope of the existing gypsum storage facility.

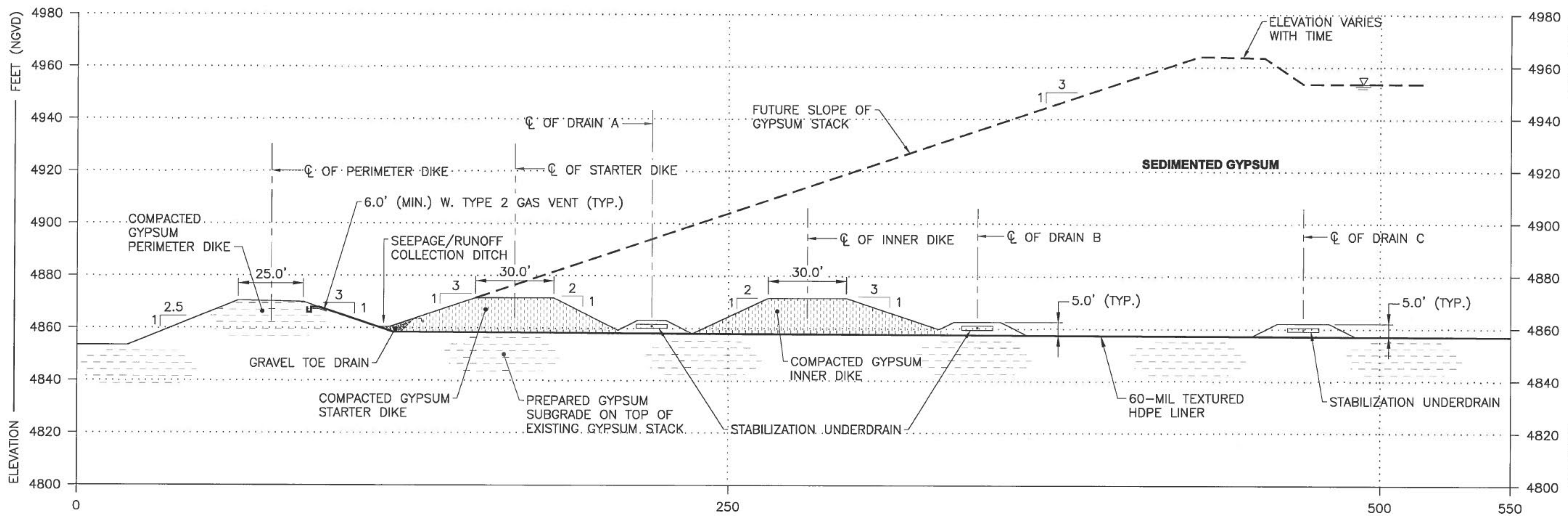


Figure 1-1.

TYPICAL CROSS SECTION OF PERIMETER DIKE AND STABILIZATION UNDERDRAINS FOR VERTICAL EXPANSION OF EXISTING STACK

SCALE: 1" = 40'

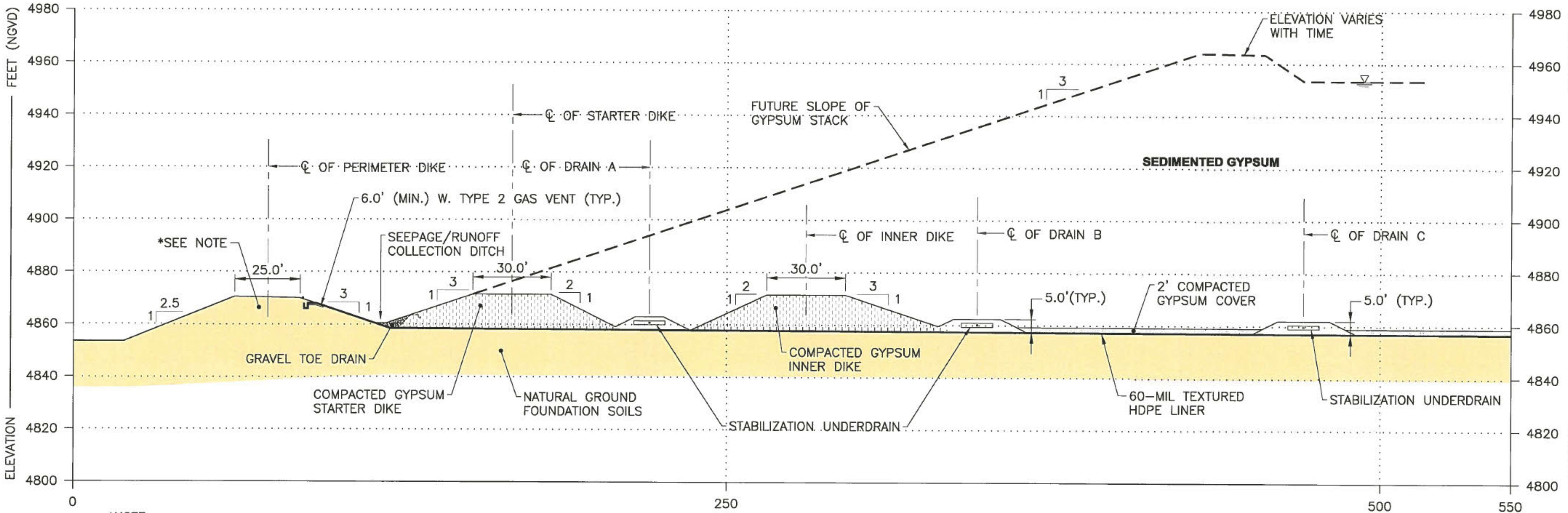
TYPICAL CROSS SECTION OF PERIMETER DIKE AND STABILIZATION UNDERDRAINS

Ardaman & Associates, Inc.
Geotechnical, Environmental and Materials Consultants

PHOSPHOGYPSUM STORAGE AREA

Simplot

DRAWN BY: BTW	CHECKED BY: DAP	DATE: 06/14/17
FILE NO. 17-13-0049	APPROVED BY:	FIGURE: 2



*NOTE:

INITIAL DIKE HEIGHT WILL VARY BASED ON EXISTING NATURAL GROUND GEOMETRY.

Figure 1-2.

TYPICAL CROSS SECTION OF PERIMETER DIKE AND STABILIZATION UNDERDRAINS FOR NATURAL GROUND EXPANSION

SCALE: 1" = 40'

TYPICAL CROSS SECTION OF PERIMETER DIKE AND STABILIZATION UNDERDRAINS

Ardaman & Associates, Inc.
Geotechnical, Environmental and Materials Consultants

PHOSPHOGYPSUM STORAGE AREA

Simplot

DRAWN BY: BTW | CHECKED BY: DAP | DATE: 06/14/17
FILE NO. 17-13-0049 | APPROVED BY: | FIGURE: 3

S:\SIMPLOT\EIS\First Submittal to BLM\FIGURE 3 -TYPICAL CROSS SECTION OF PERIMETER DIKE ON NATURAL GROUND.dwg 6/15/2017 10:18:07 AM, ruben.hoffman

Photo 1-1 - Recent Lateral Expansion Area Showing Perimeter Earthen Dike Construction and Site Preparation Prior to Lining

Photo 1-2 - Lined Lateral Expansion Looking at Graded Exterior Slope of Existing Gypsum Stack Prior to Lining

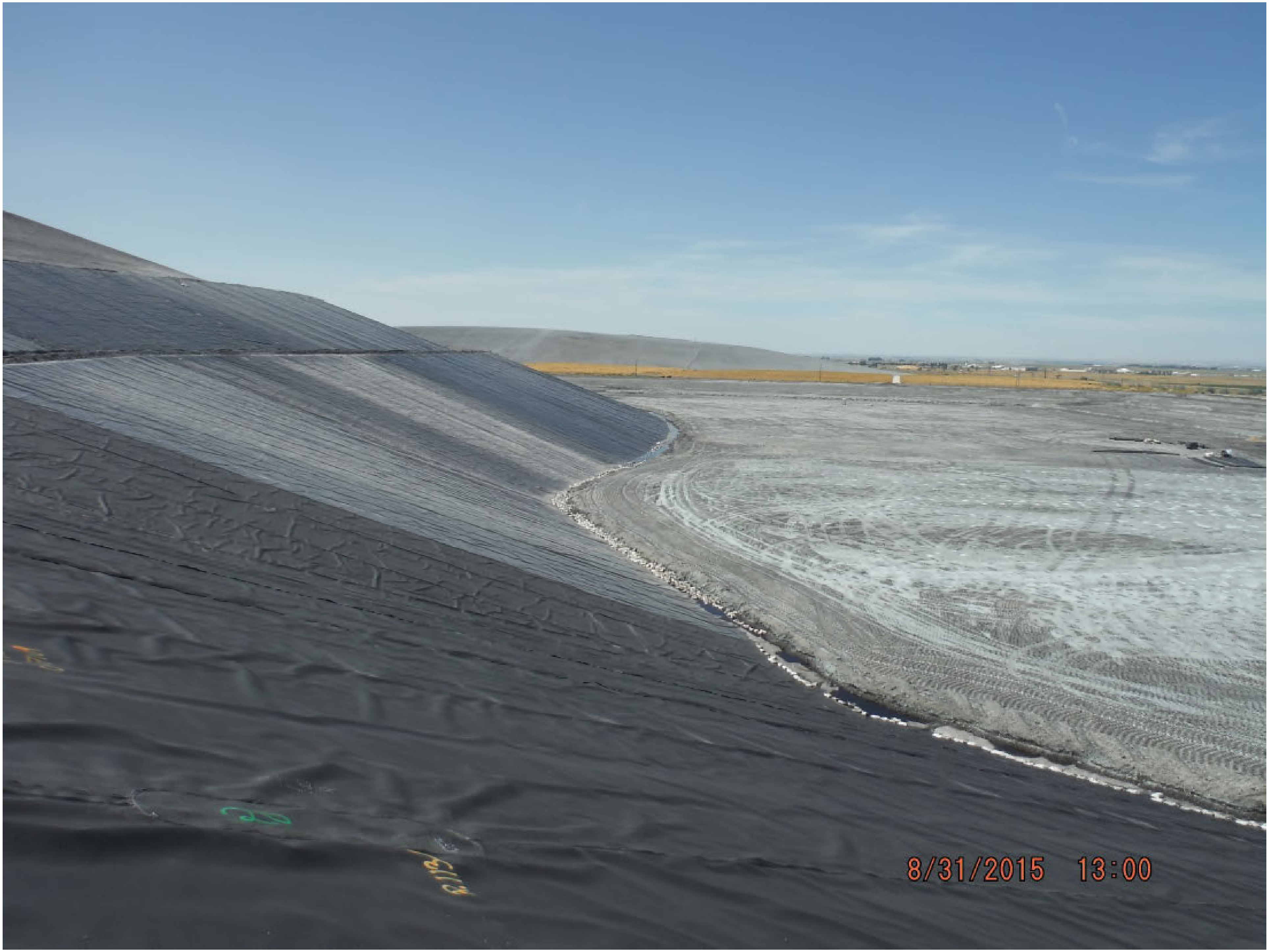


Photo 1-3 - Lined North Wall Slope of Existing Gypsum Stack Adjacent to Lined Expansion Area

Photo 1-4 - External Slope of Perimeter Earthen Dike Prior to Final Grading and Grassing

1.1.1 Bottom Liner Design

The proposed vertical and/or lateral expansions of the existing Don Plant gypsum stack system would be provided with a composite liner system that includes a 60-mil HDPE liner covered with either a compacted or sediment layer of gypsum that typically has a coefficient of permeability (hydraulic conductivity) equal to or less than 1×10^{-4} centimeters per second (cm/sec) over a vertical thickness of not less than 2 feet. The other options is a more conventional liner system consisting of an HDPE liner underlain by not less than 18 inches of clayey soil with a maximum hydraulic conductivity of 1×10^{-7} cm/sec.

The HDPE liner used beneath the gypsum stack exterior would be textured on both the top and bottom surfaces to provide additional friction at the interfaces with the overlying gypsum and underlying foundation soils (as needed to improve stability of the gypsum stack exterior walls). Smooth liner (top and bottom) would be provided within interior portions of the gypsum storage area where side slope stability is not a concern. At locations where the gypsum fill would abut relatively steep mountain slopes, the HDPE liner would be textured on the bottom and smooth on the top to minimize the effects of downdrag on the liner surface due to consolidation and settlement of the sedimented gypsum deposits placed on top of the lined surface.

1.1.2 Typical Preparation of Rugged/Steep Mountain Slopes

Photo 1-5 through **Photo 1-11** illustrate various stages of construction associated with grading and lining very steep and rugged mountain slopes (such as the south canyon area). **Photo 1-5** and **Photo 1-6** show some of the typical mountain slopes on the south side of the existing Don Plant gypsum storage area prior to and during blasting and regrading operations. **Photo 1-7** shows the prepared slopes on the south side of the existing gypsum stack prior to lining. After final grading of the rock slope, a thin layer (cushion) of dry gypsum or natural ground overburden soils (typically less than one foot in vertical thickness) is placed over the rock surface (**Photo 1-8**), followed by the placement of a high strength, woven geotextile that will separate the prepared rock surface from the overlying liner system (**Photo 1-9**). Although not shown, an additional 2-foot minimum thickness of dry gypsum is placed over the non-woven geotextile as a separation between the geotextile and the HDPE liner. **Photo 1-10** and **Photo 1-11** show examples of the HDPE liner placement on some of the mountain slope on the south side of the existing Don Plant gypsum stack. In areas that are flat enough for the prepared natural ground rocky slope to be thoroughly compacted with a smooth-drum roller with sufficient weight to break down and smooth all of the sharp edges on the regraded rock surface, a thick, 16-ounce, non-woven geotextile could potentially be used as a cushion layer between the prepared rock surface and the HDPE liner system.

Photo 1-5 - Typical Example of Rugged Mountain Slope Prior to Preparation

Photo 1-6 - Example of Mountain Slope During Blasting and Preparation for Lining

Photo 1-7 - Example of Prepared Mountain Slope Prior to Lining

Photo 1-8 - Regraded Mountain Slope Showing Placement of Dewatered Gypsum Cushion Layer

Photo 1-9 - Regraded Mountain Slope Showing Placement of High Strength Woven Geotextile

Photo 1-10 - Placement of HDPE Liner over Prepared Mountain Slope

Photo 1-11 - View of Liner Placement on Prepared Mountain Slope on the south Side of the Existing Gypsum Stack

2 References

Ardaman & Associates, Inc. 2017. *General Design and Construction Techniques for Gysum Stack Expansion*.

Simplot [J.R. Simplot Company]

2015. *Gypsum Stack Lining Project Lateral Expansion. Simplot Don Plant. Pocatello, Idaho*. March 2015.

Blackrock Land Exchange

Final Environmental Impact Statement

Appendix F

Paleontological Technical Report

BLACKROCK LAND EXCHANGE

PALEONTOLOGICAL RESOURCES TECHNICAL REPORT

Prepared by:

Paleo Solutions
2785 N. Speer Blvd, Unit LW01
Denver, CO 80211

Prepared for:

U.S. Department of the Interior
Bureau of Land Management

BLM Pocatello Field Office
4350 Cliffs Drive
Pocatello, Idaho 83204

August 23, 2019

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACRONYMS AND ABBREVIATIONS

BLM	Bureau of Land Management
IM	Instructional Memorandum
IMNH	Idaho Museum of Natural History
Paleo Solutions	Paleo Solutions, Inc.
PBDB	Paleobiology Database
PFYC	Potential Fossil Yield Classification
Proposed Action	Blackrock Land Exchange
PRPA	Paleontological Resources Preservation Subtitle of the Omnibus Public Lands Act of 2009
Simplot	J.R. Simplot Company

1.0 INTRODUCTION

This report presents the results of the assessment of readily available existing paleontological information and a field survey conducted by Paleo Solutions, Inc. (Paleo Solutions) for the Blackrock Land Exchange (Proposed Action), as summarized in Table 1. This study was conducted in accordance with Bureau of Land Management (BLM) paleontological resource management policies, guidelines and procedures, and established best practices in mitigating impacts on paleontological resources (Murphey et al. 2019). The purpose of this study is to evaluate the potential for adverse impacts on previously recorded, and currently undiscovered, scientifically important paleontological resources within the project area, and provide mitigation recommendations as appropriate.

1.1 Project Description

The J.R. Simplot Company (Simplot) has proposed a land exchange with the BLM to facilitate the expansion of Simplot's phosphate fertilizer plant (Don Plant) in Pocatello, Idaho. The Proposed Action would include the exchange of approximately 719 acres of public lands adjacent to the Don Plant managed by the BLM (Federal lands) in exchange for approximately 667 acres of private land currently owned by Simplot (non-Federal lands). The project area refers to the combined area of the Federal lands and the non-Federal lands included in the proposed land exchange as well as approximately 159 acres of additional private lands owned by Simplot north of the non-Federal lands that may be considered as part of the land exchange (Figure 1).

1.2 Project Overview and Location

The project area is located in Bannock and Power Counties, Idaho, just west and southeast of the town of Pocatello, on the Michaud, Michaud Creek, and Inkom, Idaho U.S. Geological Survey 7.5-inch topographic quadrangles (Figure 1).

The project area with an additional 0.5-mile buffer was analyzed during the geologic map review. This additional 0.5-mile buffer was applied to capture any volcaniclastic or other sedimentary facies of the Starlight Formation mapped near the project area. Volcaniclastic facies are often interbedded with extrusive igneous rocks, and are not always presented on geologic maps due to map scale. Based on geologic mapping (Trimble 1976; Rodgers et al. 2006), the project area is underlain by seven sedimentary bedrock units, all but one of which are Precambrian units that are metamorphosed to varying degrees. These Precambrian units are exposed mainly in the non-Federal lands portion of the project area southeast of Pocatello. The Starlight Formation, which is a Miocene-age volcaniclastic (sedimentary) formation, is widely distributed in the Federal lands portion of the project area west of Pocatello. Five surficial sedimentary units of Quaternary age are mapped within the project area, consisting of gravel, younger and older alluvium, loess, and boulder bar deposits. Two Quaternary basalt units are also mapped. According to the BLM's Potential Fossil Yield Classification (PFYC) System (BLM 2016), and the professional judgment of the authors of this report, the Starlight Formation has high paleontological potential (PFYC 4), and Quaternary-age surficial deposits have low to very high paleontological potential depending on the depositional environment (PFYC 2 or 5). The Precambrian sedimentary units have low paleontological potential (PFYC 2), and basalt (igneous bedrock) units have very low paleontological potential (PFYC 1).

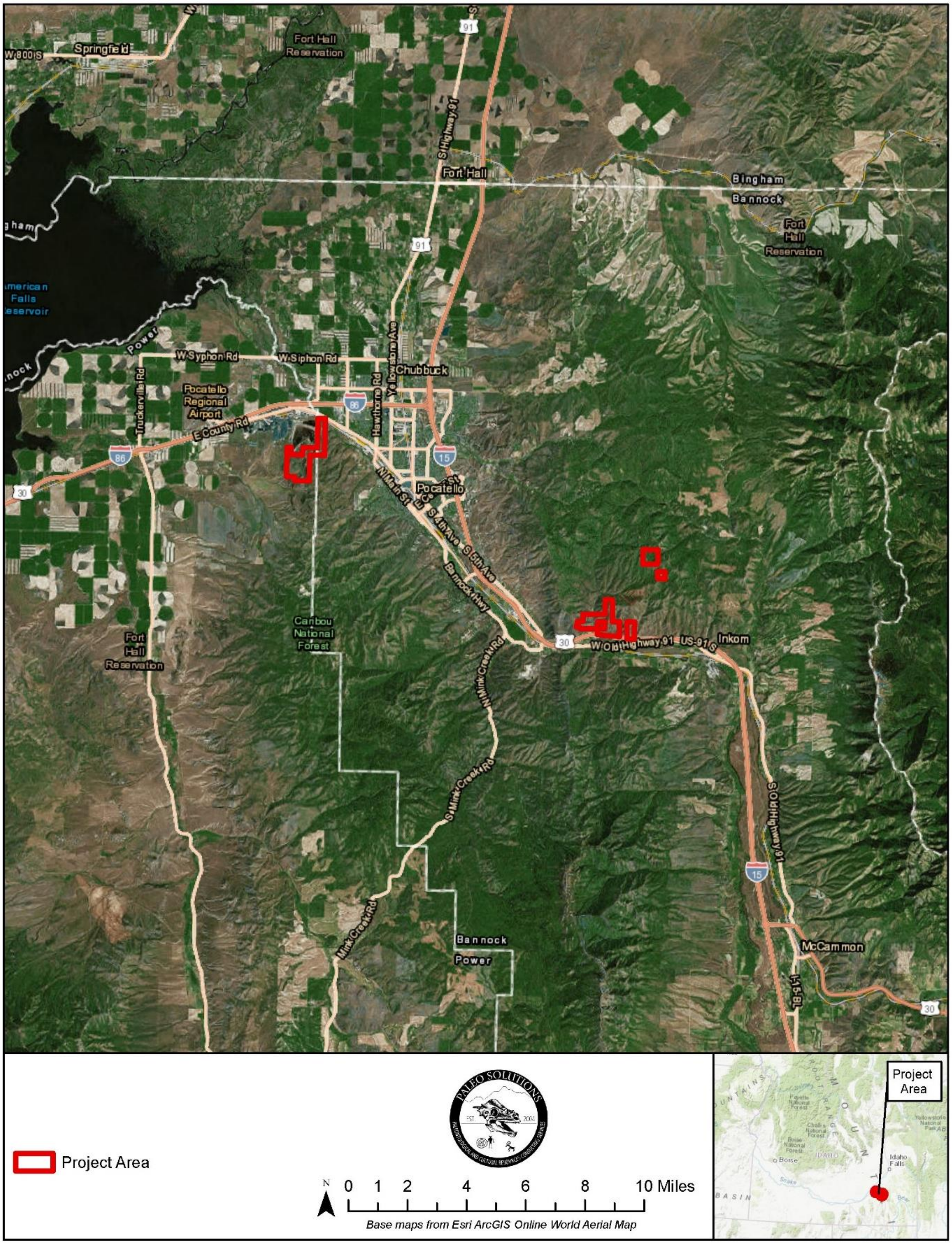


Figure 1. Overview Map of the Blackrock Land Exchange Project Area

Table 1. Project Summary

<table>
<tr><th>Project Name</th><td colspan="5">Blackrock Land Exchange Project</td></tr>
<tr><th>Project Description</th><td colspan="5">Simplot has proposed a land exchange with the BLM to facilitate the expansion of Simplot’s phosphate fertilizer plant (Don Plant) in Pocatello, Idaho. The project would include the exchange of approximately 719 acres of public lands adjacent to the Don Plant managed by the BLM in exchange for approximately 667 acres of private land currently owned by Simplot as well as 159 acres of additional private lands owned by Simplot north of the non-Federal lands that may be considered as part of the land exchange.</td></tr>
<tr><th>Total Acreage</th><td colspan="5">1,545 acres</td></tr>
<tr><th rowspan="8">Location (PLSS)</th><th>Quarter-Quarter</th><th>Section</th><th>T</th><th>R</th><th>Land Agency/Land Owner</th></tr>
<tr><td>NENW, NESW, NWNW, NWSW, SENW, SESW, SWNW, SWSW</td><td>17</td><td>T6S</td><td>R34E</td><td>BLM</td></tr>
<tr><td>NENE, NESE, NESW, NWNE, NWSE, SENE, SENW, SESE, SESW, SWNE, SWSE, 90L2, 90L3, 90L4, 90L5</td><td>19</td><td>T6S</td><td>R34E</td><td>BLM</td></tr>
<tr><td>NENW, NWNW, SENW, SWNW,</td><td>20</td><td>T6S</td><td>R34E</td><td>BLM</td></tr>
<tr><td>NENE, NENW, 00L1</td><td>30</td><td>T6S</td><td>R34E</td><td>BLM</td></tr>
<tr><td>NESE, NESW, NWSE, SENE, SENW, SESE, SESW, SWNE, SWSE</td><td>6</td><td>T7S</td><td>R36E</td><td>BLM</td></tr>
<tr><td>NENE, SENE</td><td>7</td><td>T7S</td><td>R36E</td><td>BLM</td></tr>
<tr><td>NWNW, SWNW</td><td>8</td><td>T7S</td><td>R36E</td><td>BLM</td></tr>
<tr><th>Topographic Map(s)</th><td colspan="5">Michaud, Michaud Creek, and Inkom U.S. Geologic Survey 7.5’ Topographic Quadrangles</td></tr>
<tr><th>Geologic Map(s)</th><td colspan="5">Trimble, D. E., 1976, Geology of the Michaud and Pocatello quadrangles, Bannock and Power Counties, Idaho: U.S. Geological Survey, Bulletin 1400, scale 1:48,000.
Rodgers, D. W., S. P. Long, N. McQuarrie, W. D. Burgel, and C. F. Hersley. 2006. Geologic map of the Inkom quadrangle, Bannock County, Idaho: Idaho Geological Survey, Technical Report 06-2., scale 1:24,000.</td></tr>
<tr><th>Geologic Units</th><td colspan="5">Pocatello Formation (pCpb, pCps, pCpl, pCpu) (PFYC 2); Blackrock Canyon Limestone (pCb) (PFYC 2); Papoose Creek Formation (pCp) (PFYC 2); Caddy Canyon Quartzite (pCc) (PFYC 2); Inkom Formation (pCi) (PFYC 2); Mutual Formation (pCm) (PFYC 2); Starlight Formation (Tsur, Tsma, Tslr, Ts, Tsuv, Tsup) (PFYC 4); Basalt (QTb) (PFYC 1); Basalt of Portneuf Valley (Qp) (PFYC 1); Michaud Gravel (Qm) (PFYC 2); Boulder bars (Qb) (PFYC 2); Older alluvium (Qalo) (PFYC 5); Loess (Ql) (PFYC 2); Younger alluvium (Qal) (PFYC 2).</td></tr>
<tr><th>Surveyor(s)</th><td colspan="5">John R. Foster, Ph.D., and John Munson, B.S.</td></tr>
<tr><th>Survey Date(s)</th><td colspan="5">July 18, 2019</td></tr>
<tr><th>Areas Surveyed</th><td colspan="5">Sections 17, 19 and 20, T6S, R34E</td></tr>
<tr><th>Previously Documented Fossil Localities</th><td colspan="5">Three fossil localities occur within Township 6 South, Range 34 East, all in Pleistocene surficial units; several additional localities in Miocene and Quaternary units in the Pocatello area. The Idaho Museum of Natural History has 11 fossil localities in the Starlight Formation across its distribution.</td></tr>
<tr><th>Newly Documented Fossil Localities</th><td colspan="5">Non-significant Fossil Occurrences: 0
Significant Fossil Localities: 0</td></tr>
</table>

2.0 DEFINITION AND SIGNIFICANCE OF PALEONTOLOGICAL RESOURCES

As defined by Murphey and Daitch (2007), paleontology is a multidisciplinary science that combines elements of geology, biology, chemistry, and physics in an effort to understand the history of life on earth. Paleontological resources, or fossils, are the remains, imprints, or traces of once-living organisms preserved in rocks and sediments. These include mineralized, partially mineralized, or unmineralized bones and teeth, soft tissues, shells, wood, leaf impressions, footprints, burrows, and microscopic remains.

According to the Paleontological Resources Preservation Subtitle of the Omnibus Public Lands Act of 2009 (PRPA), the term *paleontological resources* means any fossilized remains, traces, or imprints of organisms, preserved in or on the earth's crust, that are of paleontological interest and that provide information about the history of life on earth.

The fossil record is the only evidence that life on Earth has existed for more than 3.6 billion years. Fossils are considered non-renewable resources because the organisms they represent no longer exist. Therefore, once destroyed, a fossil can never be replaced. Fossils are important scientific and educational resources because they are used to:

- Study the phylogenetic relationships among extinct organisms, as well as their relationships to modern groups;
- Elucidate the taphonomic, behavioral, temporal, and diagenetic pathways responsible for fossil preservation, including the biases inherent in the fossil record;
- Reconstruct ancient environments, climate change, and paleoecological relationships;
- Provide a measure of relative geologic dating that forms the basis for biochronology and biostratigraphy, and that is an independent and corroborating line of evidence for isotopic dating;
- Study the geographic distribution of organisms and tectonic movements of land masses and ocean basins through time;
- Study patterns and processes of evolution, extinction, and speciation; and
- Identify past and potential future human-caused effects on global environments and climates.

Paleontological resources vary widely in their relative abundance and distribution and not all are regarded as significant. According to BLM Instructional Memorandum (IM) 2009-011 (BLM 2008), a *significant paleontological resource* is defined as:

> "Any paleontological resource that is considered to be of scientific interest, including most vertebrate fossil remains and traces, and certain rare or unusual invertebrate and plant fossils. A significant paleontological resource is considered to be of scientific interest if it is a rare or previously unknown species, it is of high quality and well-preserved, it preserves a previously unknown anatomical or other characteristic, provides new information about the history of life on earth, or has an identified educational or recreational value. Paleontological resources that may be considered not to have scientific significance include those that lack provenience or context, lack physical integrity due to decay or natural erosion, or that are overly redundant or are otherwise not useful for research. Vertebrate fossil remains and traces include bone, scales, scutes, skin impressions, burrows, tracks, tail drag marks, vertebrate coprolites (feces), gastroliths (stomach stones), or other physical evidence of past vertebrate life or activities."

The full significance of fossil specimens or fossil assemblages cannot be accurately predicted before they are collected and, in many cases, before they are prepared in the laboratory and compared with previously collected fossils. Pre-construction assessment of significance associated with an area or formation must be made based on previous finds, characteristics of the sediments, and other methods that can be used to determine paleoenvironmental and taphonomic conditions.

3.0 LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

3.1 BLM Authorities and Standards

Various laws, regulations, and standards govern how fossils on public lands may be collected and preserved. The BLM currently uses the PRPA as the legislative authority for its paleontological resource policies. Implementing regulations for the PRPA, Title VI, Subtitle D, are currently under review. Additionally, BLM Handbook 8720-1 (BLM 1998) and IM 2009-011 (BLM 2008) provide general procedural guidelines for the management and mitigation of adverse impacts on paleontological resources. Management objectives include locating, evaluating, managing, and protecting paleontological resources, as well as ensuring that proposed land use projects do not inadvertently damage or destroy important paleontological resources.

Under the PRPA, the Secretaries (of the Interior and Agriculture) shall manage and protect paleontological resources on Federal land using scientific principles and expertise. The PRPA is modeled after the Archaeological Resources Protection Act and incorporates the recommendations of the May 2000 report of the Secretary of the Interior, *Assessment of Fossil Management on Federal and Indian Lands*, regarding future actions to formulate a consistent paleontological resources management framework. With the passage of the PRPA, Congress officially recognized the importance of paleontological resources on Federal lands by declaring that fossils from Federal lands are Federal property. The PRPA essentially codifies existing policies of the BLM, National Park Service, U.S. Forest Service, Bureau of Reclamation, and U.S. Fish and Wildlife Service. The PRPA provides the following:

- Uniform definitions for paleontological resources and casual collecting;
- Uniform, minimum requirements for paleontological resource use permit issuance (terms, conditions, and qualifications of applicants);
- Uniform criminal and civil penalties for illegal sale and transport, and theft and vandalism, of fossils from Federal lands; and
- Uniform requirements for curation of Federal fossils in approved repositories.

4.0 METHODS

This study collected and evaluated readily available existing paleontological data for the project area. Existing paleontological data analyzed in this assessment are combined from geologic maps, a preliminary version of the regional BLM PFYC (BLM 2008, 2016) of the geologic units within the project area, published and unpublished literature, and the results of museum records searches. This report assesses the paleontological sensitivity of the geologic units within the project area through research on known fossil potential and paleontological significance and the number and significance of previously recorded and newly discovered fossil localities, in the same geologic units, within the project area and in the general region. The scope of this study included using the results of the analysis of existing data to assign PFYC values to the geologic units within the project area.

4.1 Personnel

This paleontological resource assessment and report was conducted by Paleo Solutions paleontologists Kate D. Zubin-Stathopoulos, M.S., and John R. Foster, Ph.D., under the direction of Principal Investigator Paul C. Murphey, Ph.D. The field survey was conducted by John R. Foster, Ph.D., and John Munson, M.S.

4.2 Analysis of Existing Data

The analysis of existing paleontological data included the following elements:

1. A geologic map review to determine the distribution of geologic units within the project area using three geologic maps prepared by Trimble (1976) and Rodgers et al. (2006);
2. A literature search to evaluate the paleontological potential of the geologic units underlying the project area, as well as the potential of these geologic units to yield fossils in the vicinity of the project area; and
3. A museum record search to determine the presence of previously recorded fossil localities within and near the project area from the Idaho Museum of Natural History (IMNH) fossil locality database, with an additional records search conducted using the public online Paleobiology Database (PBDB).

The record search area included the same geologic units that are mapped within the project area.

4.3 Field Survey Methods

A pedestrian field survey followed the analysis of existing data. The survey focused on areas where mapped Starlight Formation appeared in aerial imagery to have possible exposures of sedimentary deposits interbedded with volcanic facies (porphyritic trachyandesite) of the Starlight Formation on BLM lands within the project area located near the Don Plant. The field survey was completed on July 18, 2019.

The survey was designed to accomplish three important goals: (1) ascertain the presence of sedimentary (volcaniclastic) interbedded with extrusive igneous rocks of the Starlight Formation; (2) evaluate the possible presence of previously unknown scientifically important vertebrate fossils and/or scientifically important occurrences of invertebrate, plant, or trace fossils located in those units; and (3) evaluate the potential for adverse impacts on any subsurface paleontological resources.

The paleontological survey focused on an area in a northwest-trending valley south of the present Don Plant. Other BLM lands within this portion of the project area were confirmed as lacking exposures or consisting only of unfossiliferous igneous rocks. All areas surveyed were thoroughly inspected for potentially fossiliferous rocks and surface fossils. Field observations of surface geology were not always consistent with published geologic mapping due to map scale imprecision.

The project areas are divided into survey areas to summarize field survey results presented in Table 4. These survey areas are defined and labeled by the Public Land Survey System map section that the project areas intersected, with the format: section-township-range.

5.0 ANALYSIS OF EXISTING DATA RESULTS

The project area is located in Bannock and Power Counties, Idaho (see Figure 1). This section summarizes the geology and paleontology of the mapped geologic units within the project area. The

literature search was based on the same geologic units that are mapped within the project area in geologically pertinent parts of the region.

5.1 Geologic Map Review

During the geologic map review, the project area was analyzed with an additional 0.5-mile buffer. This additional 0.5-mile buffer was applied to capture any volcaniclastic or other sedimentary facies of the Starlight Formation mapped near the project area. Volcaniclastic facies are often interbedded with extrusive igneous rocks and are not always portrayed on geologic maps due to map scale. Based on geologic mapping by Trimble (1976) and Rodgers et al. (2006), the project area including the 0.5-mile buffer is underlain by seven mapped sedimentary bedrock units, two igneous basaltic units, and five surficial Quaternary sedimentary units (Table 2; Figure 2 through Figure 4). Six of the seven sedimentary bedrock units are Precambrian in age and are metamorphosed to some degree. The sedimentary bedrock unit of most paleontological interest in the project area is the Starlight Formation (volcaniclastic and tuffaceous sedimentary rocks) and is described further in Section 5.2.2. The surficial Quaternary sedimentary units include gravel, younger and older alluvium, loess, and boulder bar deposits. Older alluvium in Idaho is also considered to be paleontologically sensitive and is discussed in detail in Section 5.2.3. The two igneous bedrock units are Quaternary-age basalts; because igneous bedrock units have very low potential to contain paleontological resources, they are not described in detail in this report.

The BLM provided the PFYC values of Idaho geologic units used in this analysis. Table 2 provides PFYC values for all the geologic units mapped within the project area including the 0.5-mile buffer. Because some of the PFYC values provided by the BLM are not consistent with the PFYC definitions (BLM 2016), or are not listed in the Idaho PFYC data provided for this analysis, Paleo Solutions' PFYC recommendations are also provided.

Table 2. Sedimentary Geologic Units within the Project Area

Geologic Unit Name	Map Unit Abbreviation	Common Fossils	Age	BLM PFYC	Recommended PFYC
Younger alluvium	Qal	Too young to contain fossil material	Holocene	Not provided	2
Loess	Ql	May preserve fossil material	Pleistocene-Holocene	0	2
Older alluvium (including American Falls)	Qalo	Mastodon and diverse assemblages of Ice Age mammals	Pleistocene	5	5
Boulder bars	Qb	May contain Ice Age mammals	Pleistocene	0	2
Michaud Gravel	Qm	May contain Ice Age mammals	Pleistocene	0	2
Basalt of Portneuf Valley	Qp	Not likely to contain recognizable paleontological resources	Pleistocene	0	1
Basalt	QTb	Not likely to contain recognizable paleontological resources	Pliocene-Pleistocene	0	1
Starlight Formation	Tsur, Tsma, Tslr, Ts, Tsuv, Tsup	Mollusks, diatoms, horses, camels, carnivores, oreodonts, proboscideans, rodents	Miocene	4	4
Mutual Formation	pCm	No reported fossils (fossils of microorganisms have been reported from similar rocks elsewhere)	Precambrian (Neoproterozoic)	Not provided	2
Inkom Formation	pCi	No reported fossils (fossils of microorganisms have been reported from similar rocks elsewhere)	Precambrian (Neoproterozoic)	Not provided	2
Caddy Canyon Quartzite	pCc	No reported fossils (fossils of microorganisms have been reported from similar rocks elsewhere)	Precambrian (Neoproterozoic)	Not provided	2
Papoose Creek Formation	pCp	No reported fossils (fossils of microorganisms have been reported from similar rocks elsewhere)	Precambrian (Neoproterozoic)	Not provided	2
Blackrock Canyon Limestone	pCb	No reported fossils (fossils of microorganisms have been reported from similar rocks elsewhere)	Precambrian (Neoproterozoic)	Not provided	2
Pocatello Formation	pCpb, pCps, pCpl, pCpu	No reported fossils (fossils of microorganisms have been reported from similar rocks elsewhere)	Precambrian (Neoproterozoic)	Not provided	2

Source: Rodgers et al. 2006; Trimble 1976

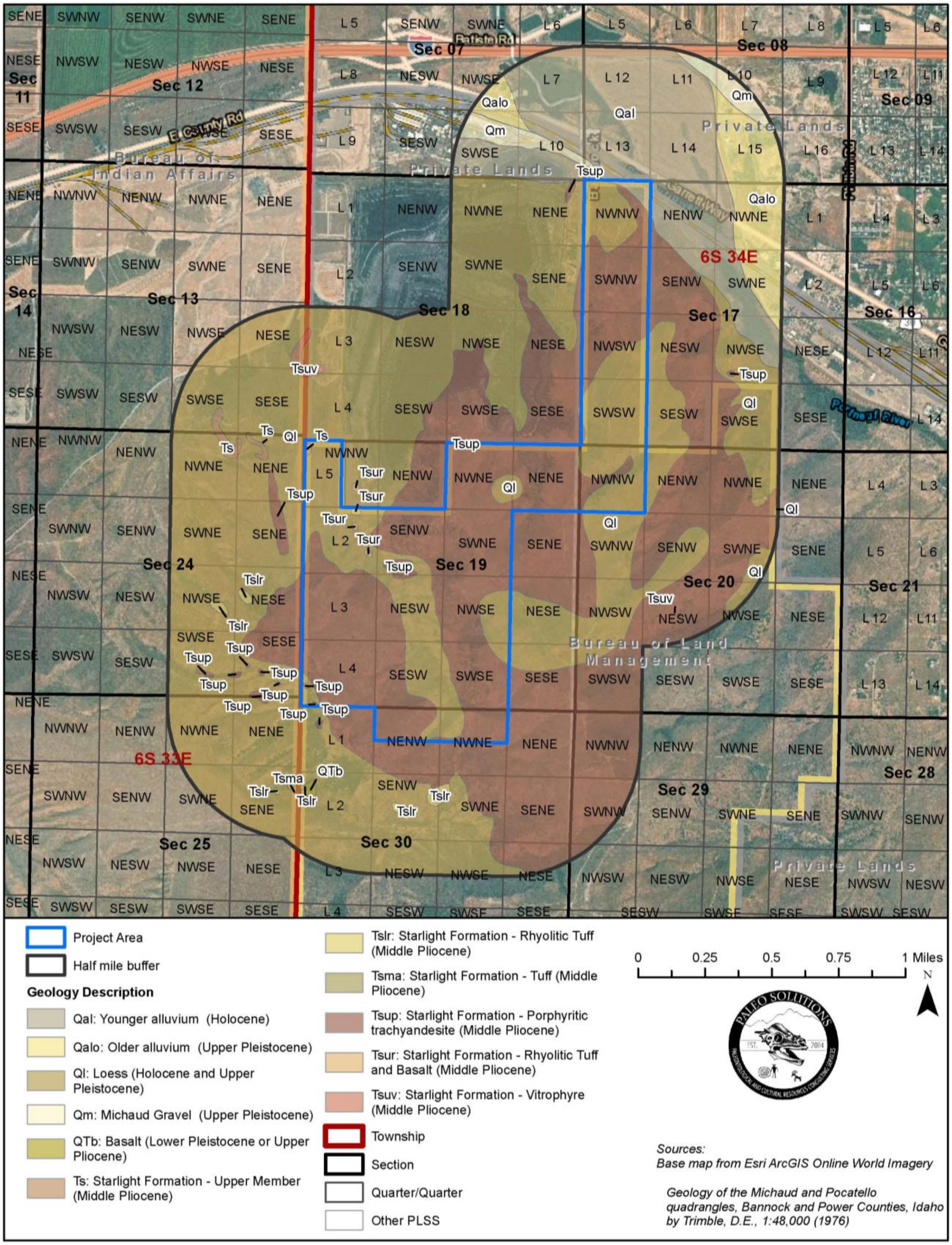


Figure 2. Geologic Map of the Federal Lands Showing the Northwesternmost Area

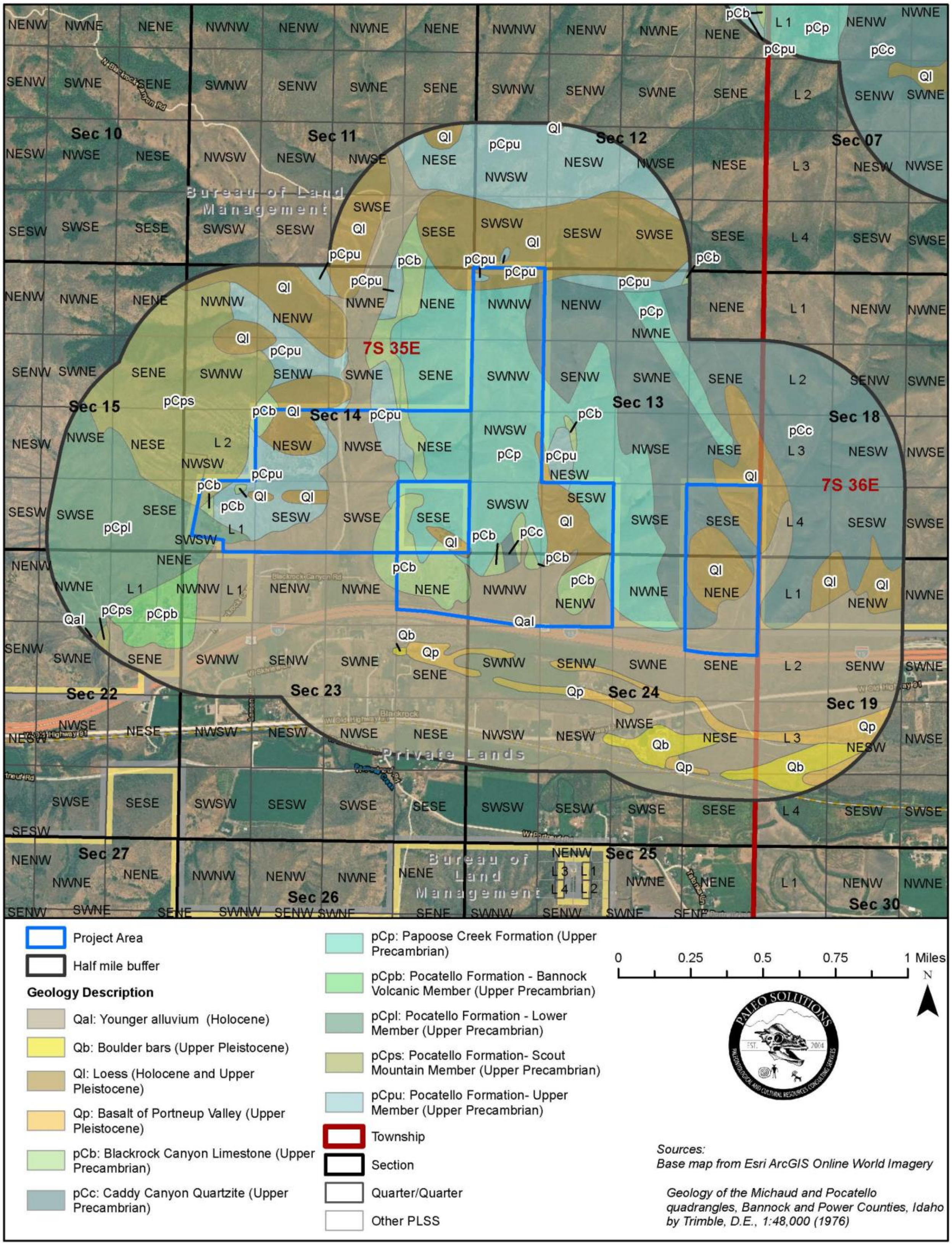


Figure 3. Geologic Map of the Non-Federal Lands in the Northeasternmost Portion

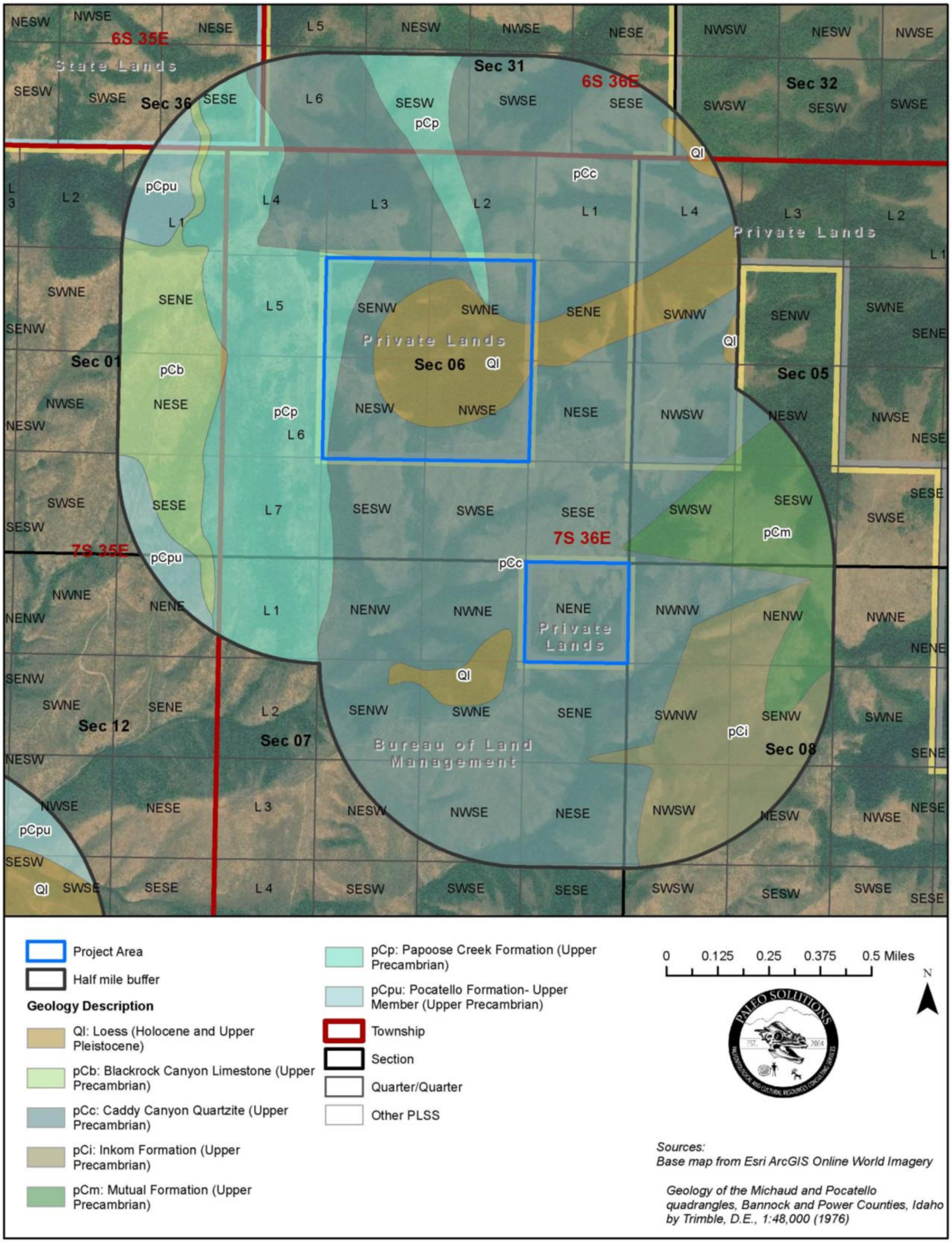


Figure 4. Geologic Map of Additional Simplot Private Lands that May Be Considered in the Land Exchange, in the Southernmost Area

5.2 Literature Search

The project area is generally located in the Bannock Range of the southeastern Idaho Basin and Range Province, on the edge of the Snake River Plain. Idaho's Basin and Range Province contains sedimentary and volcanic rocks dating from the Precambrian to the Quaternary, although structurally the province has been active since the Miocene. The province is bisected into southeastern and east-central regions by the volcanics of the Snake River Plain. The region has been influenced by Laramide thrust faulting and mountain building, Tertiary extension, and volcanism related to the Yellowstone hot spot. By the Quaternary, glaciation within the higher mountains to the east and sedimentation in the lowlands resulted in deposition of stream channel and wash gravels and fluvial fine-grained clays, muds, and sands in the valleys. The general geology and paleontological content of the geologic units mapped within the project area are described in more detail below. The PFYC assignments made below are based on the results of this study.

5.2.1 Precambrian Formations

The project area is underlain in part by the Pocatello (Ludlum 1942), Blackrock Canyon Limestone, Papoose Creek, Caddy Canyon, Inkom (Woodward 1970), and Mutual Formations, all of Neoproterozoic (Precambrian) age. Other than the Pocatello and Inkom, all of these formation names were established by Crittenden et al. (1952, 1971). These formations consist of varying amounts of sandstone, siltstone, shale, conglomerate, volcaniclastics, and limestone and are slightly to moderately metamorphosed (Smith et al. 1994; Rodgers et al. 2006). These formations also represent a mix of historic terrestrial, freshwater, and marine environments. The Pocatello Formation consists of several members (Crittenden et al. 1971), and it and the Blackrock Canyon Limestone are formations ungrouped into a larger hierarchy. The other four formations (Papoose Creek, Caddy Canyon, Inkom, and Mutual) make up the lower units of the Brigham Group. Two overlying formations within the Brigham Group (Camelback Mountain Quartzite and Gibson Jack Formation), along with the Elkhead Limestone, contain shelly fossils and/or trace fossils, but the Pocatello through Mutual formations appear to be devoid of reported fossil material (Smith et al. 1994). The full section of the Pocatello through Mutual Formations consists of a thickness of more than 4,500 meters, and the Precambrian-Cambrian boundary appears to occur somewhere in the Camelback Quartzite just above the Mutual Formation (Smith et al. 1994; Rodgers et al. 2006).

Although Precambrian sedimentary formations may preserve stromatolites and fossils of microorganisms throughout North America (Knoll 2003), fossils are generally rare in these units. Therefore, the Precambrian Formations in the project area have low paleontological potential (PFYC 2).

5.2.2 Starlight Formation

The Starlight Formation was named by Carr and Trimble (1963) for outcrops near Starlight Creek in Power County, Idaho. It was divided into unnamed upper and lower members that were separated by a volcanic tuff member. In most places the Starlight Formation rests unconformably on the Madison Limestone (Paleozoic) or Precambrian rocks, and in some places it is unconformably overlain by the Neeley Formation. Fossils and radiometric dates indicate a Miocene age of approximately 7–10 million years ago (Armstrong et al. 1975; Kellogg and Marvin 1988; Kellogg et al. 1994). The Starlight Formation consists of up to 1,000 meters of gray to white, rhyolitic, friable tuff with interbedded basalt and breccia, conglomerate, and sandstone (Carr and Trimble 1963; Rodgers et al. 2006), most of which were deposited in terrestrial and freshwater environments.

Fossils of the Starlight Formation include moderately diverse and scientifically important assemblages of fossil mammals including hipparionine horses, camels, peccaries, moles, ground squirrels, cricetid rodents, procyonids, and the gomphotheriid proboscidean *Rhynchotherium* (Trimble and Carr 1976; Tedrow 1997; Tedrow et al. 1999). This mammalian fauna includes the new sciurid rodent *Paratamias*; the mountain lion-sized, raccoon- and red panda-relative musteloid carnivoran *Simocyon*; and the world's largest-ever camel, *Megacamelus*. The Starlight Formation spans the late Clarendonian to early Hemphillian North American Land Mammal Ages (Tedford et al. 1987).

Because it preserves locally abundant and moderately diverse assemblages of fossil mammals, the Starlight Formation has high paleontological potential (PFYC 4).

5.2.3 Quaternary Sedimentary Units

There are five Quaternary surficial deposits mapped within the project area. These consist of Pleistocene-age boulder bars (Qb), loess (Ql), older alluvium deposits (Qalo), and the Michaud Gravel (Qm), plus Pleistocene- to Holocene-age younger alluvium (Qal). Older alluvial deposits consist of mostly unconsolidated and partly consolidated silt, sand, cobbles, and gravel (Rodgers et al. 2006; Trimble 1976) (Figure 2 through Figure 4). Pleistocene-age deposits in the American Falls Reservoir and Pocatello areas also include alluvium, lacustrine sediments, colluvium, fanglomerate, glacial outwash, and talus of the American Falls Group.

Older Quaternary (Pleistocene) surficial sedimentary deposits have produced a scientifically important, diverse, and well-preserved assemblages of fossil vertebrates in southeastern Idaho. Among the known Ice Age fossils are a new species of mastodon (*Mammut pacificus*; Dooley et al. 2019), mammoth, sloths, mustelids, dire wolves, foxes, procyonids, bears, lynx, puma, sabretooth cats, ground squirrels, gophers, cricetid rodents, beavers, porcupines, rabbits, horses, peccaries, camels, deer, pronghorn, musk ox, and bison, as well as herons, storks, geese, ducks, condors, turkeys, grouse, blackbirds, and falcons (Hopkins et al. 1969; White 1975; Nelson and Madsen 1987; McDonald 1998; Dundas 1999). Particularly productive localities include American Falls Reservoir and Massacre Rocks.

Younger Quaternary (Holocene)-age sedimentary geologic units are generally considered too young to contain in-situ paleontological resources and are classified as having low paleontological potential (PFYC 2). Older alluvium, lacustrine, colluvial, fanglomerate, talus, and some glacial outwash deposits including deposits referred to as the American Falls Group in the American Falls Reservoir and Pocatello areas contain locally abundant and diverse assemblages of birds and mammals, and have very high paleontological potential (PFYC 5). However, the paleontological resource potential of Pleistocene-age sedimentary geologic units in southeastern Idaho may be low (PFYC 2) or moderate (PFYC 3) locally, depending on the distribution of previously recorded fossil localities.

5.3 Records Search of Previously Recorded Fossil Localities

The IMNH has three previously recorded fossil localities in Township 6 South, Range 34 East. All of these sites are in Pleistocene sediments (Rancholabrean North American Land Mammal Age), presumably Quaternary alluvium, although formation names were not recorded and the sediment types in which the fossil localities were discovered is unknown. More broadly, in the PBDB there were no localities in the Precambrian formations in the region, one locality with three collections in the Starlight Formation southwest of Pocatello (Rockland Gravel Quarry), and five localities in Quaternary sediments southwest and northeast of Pocatello. The IMNH has 11 previously recorded localities in the Starlight Formation across its distribution. Fossil localities identified in the same geologic units and vicinity as the project area are summarized in Table 3. Precise geographic data for these fossil localities were not provided by

the IMNH. However, based on the results of the museum record search, there are no IMNH fossil localities within the project area. In compliance with the PRPA, precise geographic coordinates are not available on the PBDB. Therefore, it is not possible to determine whether any of these localities are within the project area.

Table 3. Fossil Localities in the Same Geologic Units and Vicinity as Project Area

Locality Number	Locality Name	Age	Formation	Fossil Taxa	General Location
IMNH 1155	1155	Rancholabrean (Pleistocene)	Qal	*Equus*, *Paramylodon*, *Camelops*	Same Township as project area
IMNH 2268	2268	Rancholabrean (Pleistocene)	Qal	*Bison*	Same Township as project area
IMNH 2391	2391	Rancholabrean (Pleistocene)	Qal	*Bison*	Same Township as project area
PBDB 19034	Rockland Valley Gravel Quarry	Miocene	Starlight	*Simocyon, Spermophilus, Citellus, Paratamias, Rhynchotherium, Megacamelus,* Tayassuidae, Cricetidae	Southwest of Pocatello near American Falls Reservoir
IMNH 67004	Rockland	Miocene	Starlight	*Scapanus*	Southwest of Pocatello near American Falls Reservoir
PBDB 19032	Rockland	Miocene	Starlight	Equidae, Camelidae, Proboscidea	Southwest of Pocatello near American Falls Reservoir
PBDB 20160	Booth Canyon	Irvingtonian (Pleistocene)	Qal	*Bootherium*	Northeast of Pocatello near Palisades Reservoir
PBDB 200341	Gay Mine	Rancholabrean (Pleistocene)	Qal	*Mammut pacificus*	Northeast of Pocatello
PBDB 93331	American Falls Grain Elevator	Pleistocene	Qal	*Bootherium*	Southwest of Pocatello near American Falls Reservoir
PBDB 20569	American Falls Reservoir	Pleistocene	Qal	*Megalonyx*, *Paramylodon*, *Taxidea*, *Lontra*, *Canis*, *Vulpes*, *Procyon*, *Arctodus*, *Ursus*, *Lynx*, *Puma*, *Homotherium*, *Smilodon*, *Spermophilus*, *Cynomys*, *Thomomys*, *Castor*, *Ondatra*, *Erethizon*, *Brachylagus*, *Lepus*, *Mammut*, *Mammuthus*, *Equus*, *Platygonus*, *Camelops*, *Hemiauchenia*, *Odocoileus*, *Rangifer*, *Cervus*, *Antilocapra*, *Bootherium*, *Bison*, *Ardea*, *Ciconia*, *Branta*, *Anas*, *Mergus*, *Anser*, *Cathartidae*, *Meleagris*, *Bonasa*, *Agelaius*, *Falco*	Southwest of Pocatello near American Falls Reservoir
PBDB 20612	Massacre Rocks	Pleistocene	Qal	*Megalonyx*, *Paramylodon*, *Canis*, *Smilodon*, *Mammuthus*, *Mammut*, *Equus*, *Camelops*, *Odocoileus*, *Bison*	Southwest of Pocatello near American Falls Reservoir
IMNH 167	167	Miocene (Arikareean)	Starlight	None catalogued	Not available

Locality Number	Locality Name	Age	Formation	Fossil Taxa	General Location
IMNH 168	168	Miocene (Arikareean)	Starlight	None catalogued	Not available
IMNH 169	169	Miocene (Arikareean)	Starlight	None catalogued	Not available
IMNH 170	170	Miocene (Arikareean)	Starlight	None catalogued	Not available
IMNH 1121	1121	Miocene (Hemphillian)	Starlight	*Simocyon marshi*	Not available
1146	1146	Miocene (Hemphillian)	Starlight	*Epigaulus hatcheri*	Not available
IMNH 1152	1152	Miocene (Hemphillian)	Starlight	*Goniodontomys johnwhitei*	Not available
IMNH 1153	1153	Miocene (Hemphillian)	Starlight	*Mammut, Bison, C*ervidae	Not available
IMNH 1158	1158	Miocene (Hemphillian)	Starlight	None catalogued	Not available
IMNH 70071	70071	Miocene (Arikareean)	Starlight	*Mesoreodon,* Oreodontidae	Not available

Source: IMNH 2019; PBDB 2019

6.0 FIELD SURVEY RESULTS

The field survey included a pedestrian and visual examination of BLM lands of the project area south of the Don Plant in Sections 17, 19, and 20 Township 6S Range 34E. The topography of this part of the project area consists of low-relief slope and plateau plus high-relief canyons rimmed by thick cliffs of igneous rock. Grass, juniper, and sagebrush covers a large portion of the project area. Access was by a two-track road on BLM just outside the eastern edge of the Don Plant. The survey focused on potential sedimentary rock outcrops near the bottom of a deep northwest-trending canyon south of the Don Plant (in Section 19); much of the remaining part of this portion of the project area was mapped as mostly igneous Starlight Formation or as Quaternary loess and proved on visual inspection to be largely covered by soil and vegetation. The results of the areas surveyed are summarized in Table 4, and Figure 5 shows the areas surveyed as well as data points marked by "P" numbers where field photographs were captured.

6.1 Geology and Paleontology

Most of the project area south of the Don Plant contains volcanic rocks and Quaternary loess, which were not subject to a pedestrian survey. The volcanic rocks are exposed in high cliffs along the east side of the surveyed valley and appear to be mostly porphyritic trachyandesite of the Starlight Formation. These units have very low paleontological potential (PFYC 1).

The survey confirmed the presence of a potentially fossiliferous volcaniclastic sedimentary deposit within the Starlight Formation exposed near the base of the surveyed valley (Figure 6 through Figure 10). Each outcrop of this unit is up to approximately 10 meters thick and consists of various thicknesses of four primary interbedded facies. The first facies (designated "A" here) consists of soft, light tan, silty ash with matrix-supported pebble- to rarely cobble-sized angular to subrounded clasts of chert and rock fragments (Figure 8). The second facies (B) consists of light greenish-gray, ashy, coarse sandstone to pebble conglomerate with mostly angular to subrounded, clast-supported rock fragment clasts. This

facies can be sandy and highly cross-bedded in some outcrops (Figure 8). The third facies (C) consists of black to dark gray, subrounded, well sorted, soft sandstone with no sedimentary structures. The fourth facies (D) consists of light gray, fine- to very fine-grained, well-sorted, sandy ash with distinct planar bedding.

The Miocene-age Starlight Formation has produced fossil vertebrates in similar rock types in other areas and is classified as PFYC 4. However, no new fossil localities were discovered during the field survey.

Table 4. Survey Summary Overview

Survey Area	PLSS	Survey Date	%Pedestrian Survey	Topography	Mapped Formations	% Bedrock and Location	Lithologies	Fossil Localities
19-6-34	SENW, NESW, NWSE, SESW, SWSE, L2, Sec. 19, T6S, R34E	7/18/19	75% pedestrian, 25% visual	Cliffs and steep canyon slopes	Quaternary loess (Ql) and Miocene Starlight Formation (Ts)	5% Starlight Formation (Ts) as cliffs on canyon rim and rare outcrops near bottom of canyon	Silty ash, conglomerate, and sandstone	None
17-6-34	NWNW, SWNW, NWSW, SWSW, Sec. 17, T6S, R34E	7/18/19	0% pedestrian, 100% visual	Low-relief slopes and shallow canyons	Quaternary loess (Ql) and Miocene Starlight Formation (Ts)	2% Starlight Formation (Ts) in shallow canyons	Basalt	None
20-6-34	NWNW Sec. 20, T6S, R34E	7/18/19	0% pedestrian, 100% visual	Low-relief slopes and shallow canyons	Quaternary loess (Ql) and Miocene Starlight Formation (Ts)	2% Starlight Formation (Ts) in shallow canyons	Basalt	None

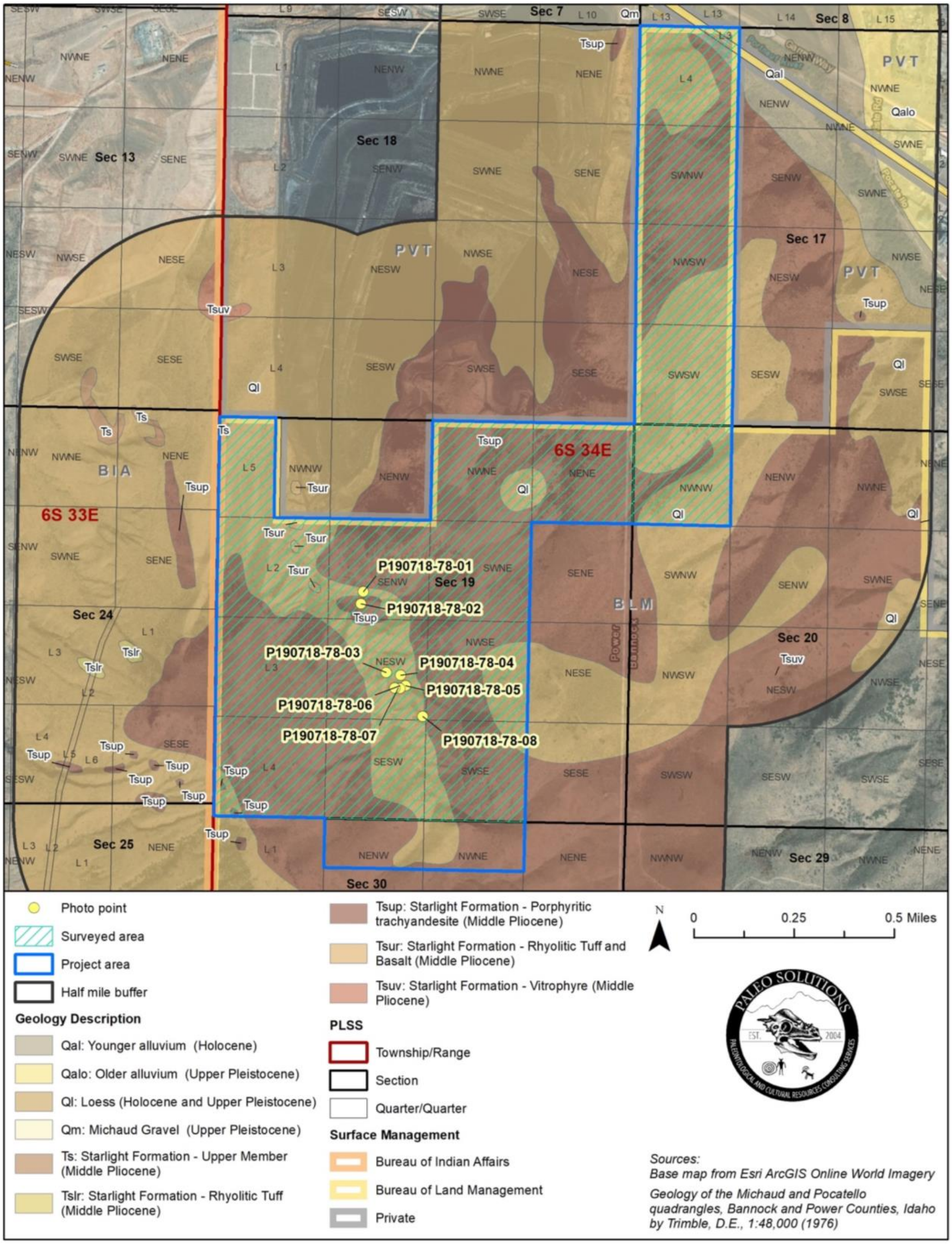


Figure 5. Geologic Map of the Federal Lands Showing the Areas Surveyed and Field Data Collection Points

Figure 6. Overview of the Surveyed Canyon Showing Basaltic Outcrop Cliffs along Rim and Outcrops of Volcaniclastic Rocks (Whitish Exposures in Left Middle Distance) at P190718-78-01, All of the Starlight Formation. View to North.

Figure 7. Approximately 8.5-Meter-Thick Outcrop of Starlight Formation Volcaniclastic Rocks at P190718-78-02, Showing Planar Bedded Sandstone, at Top, Overlying Conglomerate and Black to Dark Gray Sandstone, All Overlying Silty and Pebbly Ash. View to North-Northeast.

Figure 8. Close-Up of Silty Ash with Matrix-Supported Pebble-Sized Clasts, at Outcrop in Figure 7

Figure 9. Close-Up of Coarse Sandstone to Pebble Conglomerate with Cross-Cutting Trough Cross-Beds. Note Sandstone Flat-Pebble Clast with Leeward Pebble Conglomerate Layer to Right of Hammer Head.

Figure 10. View of Outcrop of Volcaniclastic Starlight Formation at P190718-78-01. View to Northwest.

7.0 RECOMMENDATIONS

The project area contains sedimentary bedrock geologic units of Precambrian (six units) and Miocene (one unit) age, and five surficial sedimentary deposits of Quaternary (Pleistocene and/or Holocene) age. Fossils are present in the Miocene- and certain Quaternary-age geologic units in southeastern Idaho such as alluvial and lacustrine deposits of the American Falls Group. The Miocene- and certain Quaternary-age geologic units represent the most scientifically important geologic units in the project area (Figure 2 through Figure 4). Numerous taxa are preserved in both the Starlight Formation (Miocene) and in Quaternary deposits (most likely older alluvium and/or gravel deposits and lacustrine deposits) in the vicinity of the project area. While the IMNH has no previously recorded fossil localities within the project area, precise geographic coordinates were not available for fossil localities in the project area vicinity that are listed in the PBDB (Table 3). Precambrian geologic units within the project area do preserve stromatolites and microfossils elsewhere in the western United States (e.g., Glacier National Park, Uinta Mountains, Grand Canyon), and such material may be found in the Pocatello Formation or Brigham Group, although this has not yet been reported.

Diverse, scientifically important, and well-preserved assemblages of vertebrate fossils (birds and mammals) have been documented and described in the region in the Miocene Starlight Formation and Pleistocene sedimentary deposits (most likely alluvium and lacustrine sediments) including sediments referred to by some authors as the American Falls Group. The field survey documented the presence of volcaniclastic sedimentary outcrops in the Starlight Formation within the BLM units south of the Don Plant within the project area, but no fossil material was observed in these outcrops. Therefore, no further mitigation actions are recommended for paleontological resources prior to the proposed land exchange.

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Blackrock Land Exchange

Final Environmental Impact Statement

Appendix G

Socioeconomic Technical Report

BLACKROCK LAND EXCHANGE
ENVIRONMENTAL IMPACT STATEMENT

SOCIOECONOMIC TECHNICAL REPORT

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November 11, 2019

The Bureau of Land Management is responsible for the stewardship of our public lands. The BLM's mission is to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

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ACRONYMS AND ABBREVIATIONS

AUM	animal unit month
BLM	Bureau of Land Management
CPI-U	Consumer Price Index for Urban Consumers
EIS	Environmental Impact Statement
IMPLAN	IMpact Analysis for PLANning
SESA	socioeconomic study area
Simplot	J.R. Simplot Company
SRMA	special recreation management area
USCB	U.S. Census Bureau

1.0 INTRODUCTION

Social and economic conditions are referred to collectively as "socioeconomic" conditions. The assessment of socioeconomic conditions in this report supports the Blackrock Land Exchange Environmental Impact Statement (EIS) being prepared by the Bureau of Land Management (BLM) Pocatello Field Office to analyze and disclose the potential effects of a land exchange proposed by the J.R. Simplot Company (Simplot). Under the proposal, Simplot would acquire 719 acres of public lands administered by the BLM in exchange for 667 acres of private land Simplot owns pursuant to Section 206(a) of the Federal Land Policy and Management Act. The proposed land exchange would also allow future expansion of phosphate processing operations at Simplot's Don Plant and construction of cooling ponds to implement legally enforceable requirements to reduce fluoride emissions. The public lands identified for exchange (referred to as the "Federal lands") are adjacent to the Don Plant in Power and Bannock Counties, Idaho. The private lands identified for acquisition by the BLM (referred to as the "non-Federal lands") are located in the Chinese Peak-Blackrock Canyon area in Bannock County approximately 5 miles southeast of Pocatello, Idaho.

The socioeconomic study area (SESA) includes Bannock County and Power County, which encompass the communities in Idaho that are most likely to experience socioeconomic impacts from the Blackrock Land Exchange. The boundaries of the Fort Hall Reservation, reserved for the Shoshone-Bannock Tribes, overlap with parts of Bannock and Power Counties, and thus the SESA. Figure 1-1 shows the boundaries of Bannock and Power Counties, as well as the lands within the Fort Hall Reservation that overlap with the SESA. This report begins with a summary of socioeconomic conditions in the SESA (Section 2.0), describes the regional economic model used to analyze the effects of the proposed land exchange (Section 3.0), presents direct and indirect impacts predicted by the model (Section 4.0), and provides an analysis of potential environmental justice impacts on minority or low-income communities (Section 5.0).

The Blackrock Land Exchange EIS will draw upon and reference this report to provide a concise comparative analysis of the Proposed Action and No Action Alternative, with associated reasonably foreseeable actions. Potential direct economic impacts of the Proposed Action include changes in employment, income, industry activity, and tax revenue to local, State, and Federal entities. Changes in employment and income can result in indirect socioeconomic impacts, such as changes in population, which can lead to community impacts on housing, infrastructure, and other government services. The impacts of the Proposed Action are estimated using economic impact modeling for a timeframe of 1 year. The Proposed Action may also have long-term impacts, which can be extrapolated from the model, but are dependent on the persistence of a change in production or demand.

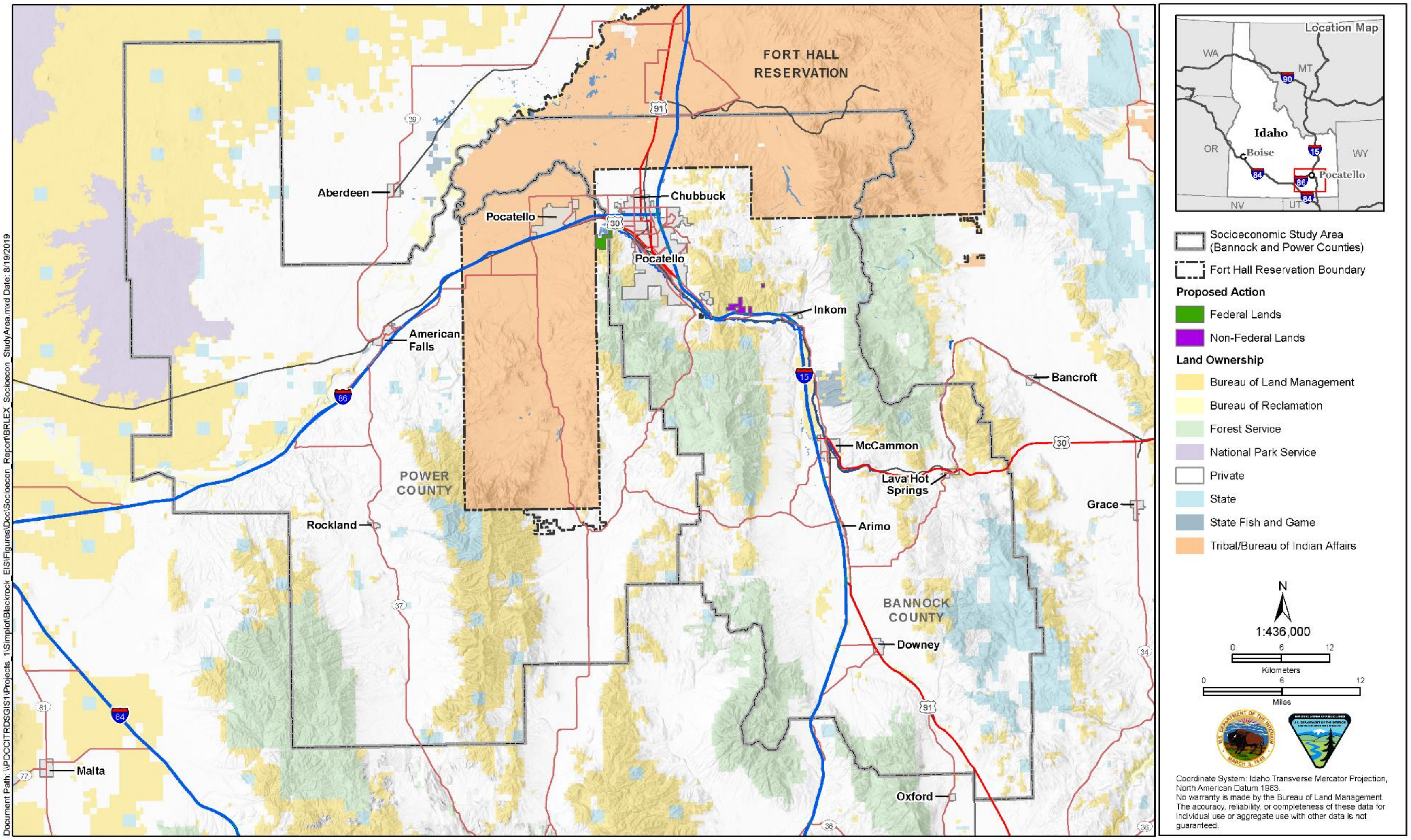


Figure 1-1. Socioeconomic Study Area

2.0 SOCIAL AND ECONOMIC CONDITIONS

This section describes existing socioeconomic conditions in Bannock and Power Counties that could be affected by the proposed land exchange. For example, reasonably foreseeable actions enabled by the Proposed Action could result in changes in employment, demand for housing and/or temporary accommodations, demand for public services (e.g., law enforcement, educational services, or utilities), as well as increased demand on community infrastructure as a result of construction-related activities. Information for the State of Idaho and the U.S. as a whole is also included where available and pertinent. Geographic and demographic characteristics of the SESA are presented in Table 2-1 below.

Table 2-1. Geographic and Demographic Characteristics of the SESA

Geographic/Demographic Characteristic	Idaho	Bannock County	Power County
Land area (square miles)	82,643	1,112	1,404
Population (2018)	1,754,208	87,138	7,768
Population density per square mile of land area (2018)	21.3	78.4	5.5

Sources: Land area from USCB 2010a. Population and population density from USCB 2019a.

The SESA is part of the southeastern Idaho region, which also includes the counties of Bear Lake, Bingham, Caribou, Franklin, and Oneida. Southeastern Idaho is generally rural, with economic activity related to agriculture, high-tech manufacturing, energy, and services and trade (Idaho Department of Labor 2019a). While the two counties in the SESA are relatively similar in total land area (square miles), Bannock County is much more populous than Power County. The two counties have population densities of 78.4 per square mile and 5.5 per square mile, respectively. A detailed demographic breakdown of the existing demographic conditions within the SESA is included in the environmental justice section of the report (Section 5.0).

2.1 Relevant Laws, Ordinances, Regulations, Standards

The National Environmental Policy Act (42 U.S. Code 4321) provides guidance specific to social and economic resources. The act specifies that an EIS must discuss social and economic effects if they are related to the natural or physical effects and the definition of “effects” includes economic and social factors. Consequently, the EIS must include an analysis of the proposed project’s economic, social, and demographic effects related to effects on the natural or physical environment in the affected area, but economic, social, and demographic effects may not be analyzed in isolation from the physical environment.

2.2 Social Conditions

The following section summarizes the existing social conditions in the SESA and any impacts on these conditions as a result of the proposed land exchange, such as the regional population, employment opportunities, property values, infrastructure and community services, and quality of life (e.g., water quality and recreation). These various resource indicators are assessed below.

2.2.1 Population

Population estimates for the SESA, Idaho, and the U.S. from 2010 to 2018 are provided in Table 2-2 below. As of 2018, Bannock County was home to over 87,000 residents while Power County had fewer than 8,000 permanent residents. The Fort Hall Reservation was home to approximately 5,955 residents

in 2017, the most recent year for which data were available. Bannock County's population grew by approximately 5 percent between 2001 and 2018 while Power County's population decreased slightly over that period. Both counties grew at slower rates than the population of Idaho or the U.S. as a whole, while Fort Hall's growth rate was similar to the state growth rate of 12 percent. Bannock County is home to the two largest population centers in the southeastern Idaho region, which are Pocatello city (54,331) and Chubbuck city (13,922). Power County's largest population center is the city of American Falls, which had a population of 4,457 as of 2010 (USCB 2010b).

Table 2-2. Selected Population Characteristics

Area	2010 Population	2018 Population	Change	% Change
Bannock County	82,839	87,138	4,299	5%
Power County	7,817	7,768	-49	-1%
Fort Hall	5,351	5,955	604	11%
Idaho	1,567,582	1,754,208	186,626	12%
United States	308,745,538	327,167,434	18,421,896	6%

Sources: Population data for 2010 from USCB 2010b. Population data for 2018 from USCB 2019a, except for Fort Hall. Fort Hall data were not available for 2018. Fort Hall data for 2017 from USCB 2019b.

While the population of the state of Idaho is projected to increase over the 10-year period from 2016 to 2026, the population of the southeastern Idaho region is projected to decrease slightly. By 2026, the state is projected to have 1,882,525 residents (12 percent increase), while the southeastern region is projected to have 161,757 residents (greater than 3 percent decrease) (Idaho Department of Labor 2018). Although population growth forecasts for the southeastern region as a whole are low, population growth in urban centers such as Chubbuck and Pocatello has been steady. Since 2015, the population of Pocatello has grown by close to 1,500 (USCB 2019c). This trend is likely to continue, with several planned projects that are expected to spur significant economic development and population growth in Pocatello and Chubbuck (Idaho State Journal 2019).

In 2018, construction began on a new interchange on Interstate 15 north of Pocatello. The new interchange is part of the Northgate District, a planned walkable community that will include thousands of new homes, a technology park, a shopping district, and medical facility expansion, among other development. Currently, there are over 10,000 homes projected to be installed alongside new commercial and retail space (Northgate Pocatello 2019).

The city of Pocatello is also home to a new Federal Bureau of Investigation data center expansion project that is set to be completed in 2019. Construction of the $100 million data center and parking garage is expected is create over 1,700 new jobs and have a total economic impact of $158 million (East Idaho Business Journal 2018). The economic activity from these two projects could drive population growth in Bannock County in the near future.

2.2.2 Housing

According to the U.S. Census Bureau (USCB) 2017 American Community Survey, Bannock County has a total of 33,870 housing units, of which 719 are vacant for rent and 660 are vacant for seasonal, recreational, or occasional use. Power County has a total of 2,992 housing units, of which 33 are vacant for rent and 53 are vacant for seasonal, recreational, or occasional use. The Fort Hall Reservation has 2,146 total housing units, of which 252 are vacant. While Bannock County has a higher number of total units, the percentage of total vacant units is higher in Power County (15 percent) compared to Bannock

(9 percent) and Fort Hall (12 percent). Information on housing availability in the SESA in 2000 and 2017 is shown in Table 2-3 below.

Table 2-3. Housing Availability in 2000 and 2017

Housing Characteristic	Idaho		Bannock County		Power County		Fort Hall	
	2000	*2017*	*2000*	*2017*	*2000*	*2017*	*2000*	*2017*
Occupancy Status								
Owner-occupied	404,903	421,439	20,817	21,200	1,962	1,784	1,415	1,480
Renter-occupied	174,505	187,685	9,865	9,590	679	760	364	414
Total Vacant	88,388	92,072	2,509	3,080	303	448	232	252
Vacant (for rent)	16,360	8,136	864	719	58	33	29	8
Vacant (for seasonal, recreational, or occasional use)	41,660	16,597	444	660	37	53	25	18
Total Housing Units	667,796	701,196	33,191	33,870	2,944	2,992	2,011	2,146
Percentage of Total Housing Units								
Owner-occupied	61%	60%	63%	63%	67%	60%	80%	78%
Renter-occupied	26%	27%	30%	28%	23%	25%	21%	22%
Total Vacant	13%	13%	8%	9%	10%	15%	12%	12%
Vacant (for rent)	2%	1%	3%	2%	2%	1%	13%	3%
Vacant (for seasonal, recreational, or occasional use)	6%	2%	1%	2%	1%	2%	11%	7%

Sources: Housing data for 2000 from USCB 2000. Housing data for 2017 from USCB 2019d and USCB 2017a. The 2017 data are 5-year estimates from the 2013–2017 American Community Survey.

As mentioned previously, the Federal Bureau of Investigation data center expansion underway in Pocatello and the new commercial development planned in the Northgate District could put increasing pressure on the housing supply of Bannock County. The Northgate project anticipates adding a total of 10,000 new homes, with construction on 350 new homes already underway (Idaho State Journal 2019).

2.2.3 Community Services

2.2.3.1 Schools

The SESA is served by five school districts, including two districts in Bannock County and three districts in Power County. The 2018–2019 school enrollment in Bannock County accounted for 5 percent of the total 2018–2019 enrollment in Idaho and was approximately eight times larger than the enrollment of Power County. School enrollment for the SESA is shown in Table 2-4 below.

Table 2-4. School Enrollment in the SESA

Area	2017–2018 Fall Enrollment	2018–2019 Fall Enrollment
Bannock County	131,793	131,907
Marsh Valley Join School District #21	1,297	1,300
Pocatello School District #25	12,496	12,607

Area	2017–2018 Fall Enrollment	2018–2019 Fall Enrollment
Power County	1,644	1,657
American Falls Joint High School District #381	1,451	1,463
Arbon Elementary School District #382	18	16
Rockland School District #382	175	178
Fort Hall Reservation	--	--
Shoshone-Bannock School District #512		128
Idaho Total	302,469	307,416

Sources: Idaho State Department of Education 2019; National Center for Education Statistics 2018.
Enrollment characteristics for the Shoshone-Bannock School District are from the 2016–2017 school year.

In addition to these five public school districts, the Fort Hall Reservation is also served by Shoshone-Bannock School District #512, which is made up of the Shoshone-Bannock Junior and Senior High School. The mission of the school is to educate Native American students in their heritage, their rights, and their responsibilities, and to prepare them for a lifetime of learning and achievement. The enrollment of the school fluctuates widely but was approximately 128 as of the 2016–2017 school year (National Center for Education Statistics 2018).

Although both counties showed a small growth in student enrollment from 2017–2018 to 2018–2019, the five school districts have reported declining student enrollment over the last several years. As a result, there are no immediate plans for additional schools or school expansions in either county. This trend also indicates that any additional students enrolled in the district as a result of the Proposed Action would not put undue stress on the existing school infrastructure. According to the Power County and Bannock County Comprehensive Plans, the largest issue affecting the school districts is how to safely bus students in from rural areas (Power County 2018; Bannock County 2008).

2.2.3.2 Law Enforcement

The Bannock County Sheriff's Department is recognized as a pioneer in rural law enforcement in the state. The department's patrol division consists of 22 deputies, who provide constant law enforcement services to all the unincorporated areas of the county and to four contracted municipalities. Additionally, the detention division has 56 deputies, and the detective division has eight trained detectives (Bannock County 2019).

The Power County Sheriff's Office is staffed by a total of 26 professionals working across several divisions. This includes nine road patrol certified officers, six of whom are assigned to full-time road patrol duties; nine deputies responsible for the operation of the Power County Jail; a single Chief Deputy who is in charge of all criminal investigations; and six full-time communication deputies in charge of the Power County Communications Center. In addition to the full-time staff, the Power County Search and Rescue is composed of 36 volunteers who operate under the authority of the Power County Sherriff according to Idaho Code 31-2229 (Power County 2018).

The Idaho State Police releases annual reports on crime statistics for each county in the state. This is done in compliance with Idaho Codes 67-3006 and 67-2915, which require Idaho State Police and fellow law enforcement agencies throughout Idaho to submit crime data under the Idaho Uniform Crime Reporting Program.

The Idaho Uniform Crime Reporting program defines crime rates in terms of numbers of crimes reported in relation to the population of a given jurisdiction. Under Idaho Uniform Crime Reporting, 22 crime categories are reported as "Group A" crimes, and 10 crime categories are reported as "Group B" crimes.

Group A crimes include arson, assault, bribery, extortion, kidnapping, robbery, homicide, and more. Group B offenses include disorderly conduct, bad checks, driving under the influence, and others. In 2017, the Idaho State Police reported there were 4,052 violent offenses and 44,191 property crimes in Idaho. The Group A crime rate in the state was 512.5 per 1,000 population (Idaho State Police Uniform Crime Reporting 2017).

In 2017, Bannock County had a Group A crime rate of 62.03 (per 1,000 inhabitants), which is lower than the state crime rate. Crimes associated with the greatest number of arrests were larceny-theft (423), drugs/narcotics (387), simple assault (362), aggravated assault (94), drug equipment violations (86), and destruction of property (82) (Idaho State Police Uniform Crime Reporting 2017).

In 2017, Power County had a crime rate for Group A crimes of 30.64 per 1,000 inhabitants, which was significantly lower than the Group A crime rate in Bannock County during the same year. There were 100 arrests for Group A crimes in the county in 2017. The greatest number of arrests were related to simple assault (34), destruction of property (17), drug/narcotic violations (14), aggravated assault (9), and burglary/breaking and entering (9). Table 2-5 shows the crime rates in each county, and how they changed between 2016 and 2017.

Index crime rate data for the Fort Hall Reservation could not be found.

Table 2-5. Index Crime Rate per 1,000 Population

Area	2016	2017	% Change
Bannock County	68.25	62.03	-9.11%
Power County	33.11	30.64	-7.46%

Source: Idaho State Police Uniform Crime Reporting 2017.

Table 2-6 shows the number of crime incidences in each county in 2016 and 2017. Overall, crime rates decreased in both counties between 2016 and 2017.

Table 2-6. Number of Crime Incidence in the SESA, 2016–2017

Offense	Bannock County			Power County		
	2016	*2017*	*%Change*	*2016*	*2017*	*%Change*
Larceny	1,793	1,637	-8.70	70	47	-32.86
Assault	1,342	1,190	-11.33	43	56	30.23
Drug/Narcotic	1,036	1,058	2.12	40	45	12.50
Burglary	385	352	-8.57	24	17	-29.17
Destruction	418	301	-27.99	45	39	-13.33
Fraud	282	297	5.32	5	7	40.00
Motor Vehicle Theft	156	140	-10.26	13	9	-30.77
Counterfeiting	90	99	10.00	1	1	0.00
Weapons	103	86	-16.50	2	1	-50.00
Sexual	74	51	-31.08	7	4	-42.86
Pornography	9	17	88.89	-	1	-
Embezzlement	9	16	77.78	-	-	-
Robbery	20	13	-35.00	-	1	-
Kidnapping	5	11	120.00	-	-	-
Stolen Property	13	10	-23.08	1	5	400.00
Arson	9	7	-22.22	2	-	-100.00

Offense	Bannock County			Power County		
	2016	*2017*	*%Change*	*2016*	*2017*	*%Change*
Sexual (Non-Forcible)	10	4	-60.00	-	2	-
Homicide	3	3	0.00	-	-	-
Animal Cruelty	-	-	-	-	-	-
Bribery	-	-	-	-	-	-
Extortion	3	-	-100.00	-	-	-
Gambling	-	-	-	-	-	-
Human Trafficking	-	-	-	-	-	-
Prostitution	2	-	-100.00	-	-	-

Source: Idaho State Police Uniform Crime Reporting 2017.

The Power County Comprehensive Plan (last updated in June 2018) identifies an immediate need for the County to replace a patrol deputy position that was lost in 2009 due to budget shortfalls. Although the index crime rate fell from 2016 to 2017, current staffing levels only allow for one patrol deputy on duty most of the time. Adding a patrol deputy would also allow the County to use patrol staff to assist with felony criminal investigations (Power County 2018).

The Fort Hall Police Department operates under the Indian Self-Determination and Education Assistance Act of 1975 (Public Law 93-638) for Law Enforcement Services and serves the community of the Shoshone-Bannock Tribes on the Fort Hall Reservation, Idaho. The department patrols the approximately 544,000-acre Fort Hall Reservation, encompassing portions of Caribou, Power, Bannock, and Bingham Counties. The Fort Hall Police Department has more than 40 staff that serve approximately 8,700 people, including Indian and non-Indian residents. Patrol officers enforce tribal and Federal laws on the Fort Hall Reservation (Shoshone-Bannock Tribes 2019f).

2.2.3.3 Fire Protection

Fire protection services in Bannock County are provided by municipal fire departments, each with their own fire district. These include Arimo Fire Department, Downey Rural Fire District, Fort Hall Fire Protection District, Jackson Creek Fire Protection District, Lava Rural Fire Protection District, McCammon Rural Fire Protection District, North Bannock (Chubbuck) Fire District, Pocatello Fire Department, and Pocatello Valley Fire District (ArcGIS 2016). Wildland fire protection services are provided by Federal and State agencies such as the U.S. Forest Service, BLM, and Idaho Department of Lands (Bannock County 2008).

Fire protection services within the city of American Falls and the surrounding area are provided by the American Falls Fire Department. The American Falls Fire Department consists of one fire station with 19 paid-per-call firefighters. The city of Rockland also has its own volunteer fire department. The Rockland Volunteer Fire Department consists of one fire station with 16 volunteer firefighters. Wildland fire protection services in Power County are provided by the U.S. Forest Service, BLM, and Idaho Department of Lands (Power County 2018; BLM 2018).

Additionally, the Fort Hall Reservation is protected by the Fort Hall Fire District and the City of Chubbuck Fire Department. Portions of the reservation fall with the Eastern Power County Fire District, the North Bannock Fire District, and the Blackfoot Snake River Fire District (ArcGIS 2016; Shoshone-Bannock Tribes 2019a).

2.2.3.4 Health Care

The SESA is in District 6 of the Southeastern Idaho Public Health District. The district provides non-critical community health services within the SESA at clinics in Pocatello (Bannock County) and American Falls (Power County). The Southeastern Idaho Public Health District has also partnered with Health West, Inc., which provides non-critical community health services in American Falls, Chubbuck, and Pocatello (BLM 2018).

Medical treatment within Bannock County is provided at the Portneuf Medical Center in Pocatello. The medical center is a regional Level II trauma center and is equipped with 187 beds and 20 intensive care unit beds (Portneuf Health Partners 2019). Portneuf Health Partners is a joint venture between the Portneuf Health Trust and LHP Hospital Group that was created in 2009. The partnership includes Portneuf Medical Center, Portneuf Quality Alliance, Portneuf Sports Medicine Institute, and numerous physician practices. The trust recently purchased 20 acres of land for use as the future medical campus of the planned Northgate Development in North Pocatello (Northgate Pocatello 2019).

Medical treatment within Power County is provided by the Power County Hospital District in American Falls. Power County Emergency Medical Services also has approximately 40 emergency medical technicians. These emergency medical technicians are on call 24/7 and respond to about 650 calls a year (Power County 2018).

The Shoshone-Bannock Community Health Center provides primary care and urgent care health services for members of the Fort Hall Reservation. The health center is staffed with attending providers, nurses, and specialists from southeastern Idaho. The location has a small pharmacy for basic needs, but does not dispense narcotics or controlled substances (Shoshone-Bannock Tribes 2019b).

2.2.3.5 Utilities

Electricity and Natural Gas Service

Electrical service in the SESA is provided by Rocky Mountain Power, Utah Power, and Idaho Power Company, while natural gas service is provided by Intermountain Gas Company (BLM 2018).

Water

Because large parts of the SESA are rural, the majority of water in the unincorporated areas is provided by private well water. There are public water systems in the cities of Chubbuck and Pocatello in Bannock County, as well as American Falls and Rockland in Power County. Both counties intend to direct future urban development to locations within current or planned urban service boundaries where municipal water and sewer services can be provided (Bannock County 2008; Power County 2018). Water and sewer services on the Fort Hall Reservation are provided by the Tribal Utilities Department. The areas of coverage include both residential and commercial properties within the reservation, as well as the Fort Hall Housing Authority and Subdivision, Tribal Business Center, Bureau of Indian Affairs, Not-Tsoo-Gah-Nee Center, Townsite, Fort Hall Casino, Shoshone-Bannock Hotel and Events Center, and Trading Post (Shoshone-Bannock Tribes 2019c).

Wastewater

Similar to the water systems, the majority of wastewater service in the SESA is provided by individual septic systems. Some of the larger communities and incorporated cities have public sewer systems (BLM 2018). The Tribal Utilities Department is responsible for treating and disposing of wastewater for those on the tribal water and sewer system on the Fort Hall Reservation (Shoshone-Bannock Tribes 2019c).

Landfill

The Bannock County Landfill and McCammon Transfer Station provide solid waste and recycling facilities for residents and businesses in Bannock County and the city of American Falls in Power County.

2.2.4 Quality of Life

2.2.4.1 Social Development and Culture

Understanding the social development, culture, and history of an area provides valuable insight into how events or changes to the area may affect the livelihood and quality of life of the residents. Economic development in Bannock County has been based on a variety of industries, including government enterprises, service industries, retail trade, transportation, and public utilities. These industries were the most significant sources of employment in the early 1970s, with manufacturing growing in significance in the late 1970s. In Power County, employment in the 1970s was mainly in farming and manufacturing industries, as well as government enterprises and retail trade (Bureau of Economic Analysis 2019).

The two counties have slightly lower population densities than the national average. In 2010, Bannock County had a population density of 74.5 people per square mile of land, an increase of 6.6 people per square mile from 2000. The number of housing units per square mile in the county in 2010 was 29.8, increasing from 26.1 in 2000. Bannock County is more densely populated than the state of Idaho. In 2010, the state had a population density of 15.6 people and 6.4 housing units per square mile. Power County is much more rural than Bannock County and Idaho as a whole. In 2010, the population density of Power County was 5.6 people and 2.1 housing units per square mile (USCB 2019e).

Bannock and Power Counties have a long history of agriculture, including a wide mix of crops, such as wheat, potatoes, and sugar beets. Ranching and diary operations have also been crucial to the region. Between 2007 and 2012, the number of farms in Power County decreased by 8 percent, but the average size of farms has increased by 13 percent (Power County 2018). In Bannock County, the number of farms increased by 1.4 percent between 1987 and 1997, but the total acres of farms and average farm size decreased significantly during the same time period, 15.8 percent and 17.4 percent, respectively (Bannock County 2008).

2.2.4.2 Cost of Living

Inflation is a common quality-of-life concern in communities experiencing rapid industrial development. Inflation is induced by relatively high wages paid in rapidly growing industries and these industries' high demands for goods and services. This reduces the discretionary spending capacity of individuals and households not employed by, or benefiting directly from, the growth industries. By increasing living costs for the entire population, the higher wages in, and increased demands by, the growth industries can reduce the real (adjusted for inflation) incomes of households living on fixed or nearly fixed incomes, despite the increase in overall regional income levels resulting from industrial development.

Consumer Price Index, which measures the average change over time in the price of a market basket of consumer goods and services, is often used to indicate cost of living. Per the Idaho Department of Labor, the national Consumer Price Index for Urban Consumers (CPI-U) is typically used to measure inflation in Idaho because it most closely represents cost of living in the state (Idaho Department of Labor 2019b). In 2017, the annual average CPI-U was 245.12, relative to 1982 to 1984. Based on the CPI-U, Idaho

experienced a 2.5 percent increase in the cost of living between 2017 and 2016, a 1.5 percent higher increase than occurred between 2015 and 2016 (Idaho Department of Labor 2019b).

2.3 Economic Conditions

The following section summarizes the existing economic conditions in the SESA and any impacts on these conditions as a result of the Blackrock Land exchange. The project could potentially affect the regional economy in terms of employment opportunities in the labor market, and income. Particular focus is paid to mining and livestock grazing industries. These various resource indicators are assessed below.

2.3.1 Labor Market Conditions

2.3.1.1 Employment, Unemployment, and Multi-year trends

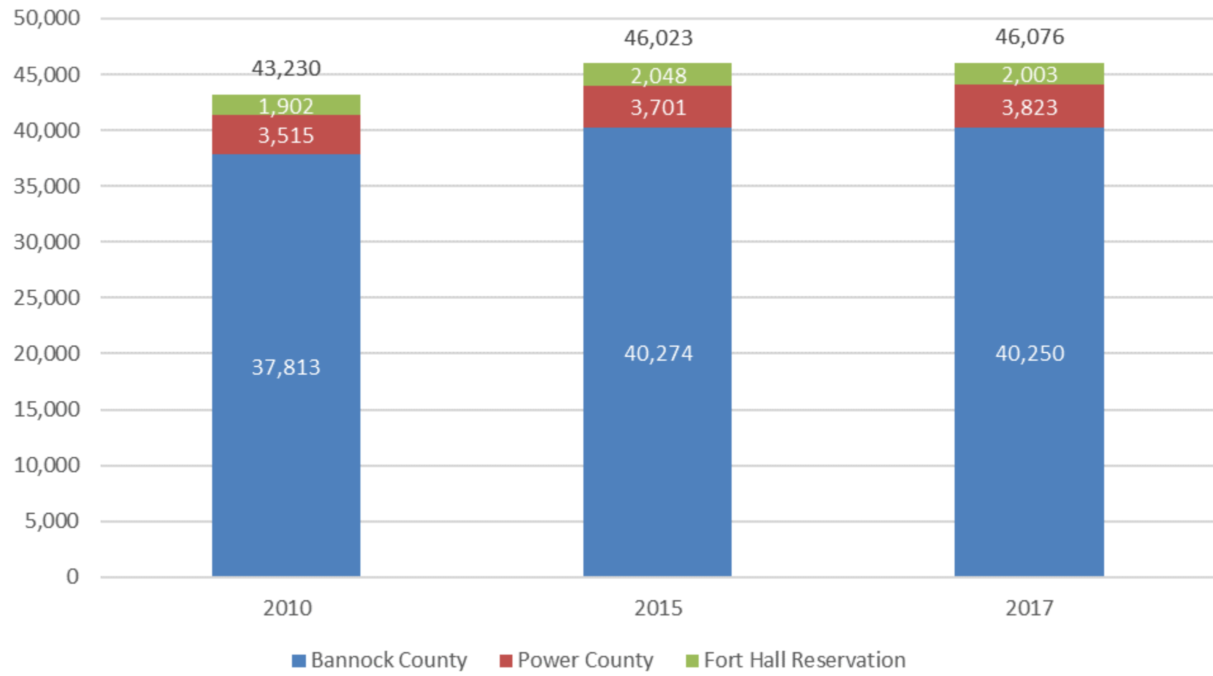
In 2017, the civilian labor force in the SESA was approximately 45,000, and nearly 48,000 if you include the labor force of the Fort Hall Reservation. Approximately 46,000 or 96 percent of those in the labor force were employed as of 2017 (Table 2-7). In 2017, Bannock County's 3.1 percent unemployment rate was slightly lower than the statewide average unemployment rate of 3.2 percent, while Power County's rate was slightly higher at 3.4. Between 2010 and 2017, the unemployment rate decreased in Bannock and Power Counties by 4.9 percent and 5.8 percent, respectively (Bureau of Labor Statistics 2019).

Table 2-7. Labor Force, Employed, and Unemployed

Location	Labor Force			Employed			Unemployed			Unemployment Rate		
	2010	**2015**	**2017**	**2010**	**2015**	**2017**	**2010**	**2015**	**2017**	**2010**	**2015**	**2017**
Idaho	761,060	795,989	834,696	692,827	762,282	807,820	68,233	33,707	26,876	9.0%	4.2%	3.2%
Bannock County	41,095	41,969	41,530	37,813	40,274	40,250	3,282	1,695	1,280	8.0%	4.0%	3.1%
Power County	3,872	3,885	3,959	3,515	3,701	3,823	357	184	136	9.2%	4.7%	3.4%
Fort Hall Reservation	2,193	2,576	2,502	1,902	2,048	2,003	291	528	500	13.3%	20.5%	19.9%

Sources: Bureau of Labor Statistics 2019; USCB 2017b, 2017c.

Figure 2-1, below, shows the total number of employed people in Bannock and Power Counties from 2010 to 2015. Bannock County has a labor force that is ten times higher than Power County, and therefore is a larger contributor to total employment in the SESA.



Source: Bureau of Labor Statistics 2019.

Figure 2-1. Total Employment in Bannock and Power Counties and Fort Hall Reservation, 2010–2017

2.3.1.2 Industry-level Employment and Average Earnings

Table 2-8 summarizes employment by job sector in Bannock and Power Counties; these data are not available for Fort Hall Reservation. The largest industries for employment are government (18 percent of total employment), health care and social assistance (13 percent), and retail trade (11 percent). Since 2010, the SESA has experienced significant employment growth in management of companies and mining. Employment in the management industry grew by 255 percent, adding 577 jobs over the 8-year time period. Although mining employment increased by 58 percent, only 11 new jobs were added during the time period, totaling to 30 jobs in 2017. Four industries saw decreases in total employment between 2010 and 2017. The largest drop in employment was in the information sector, where the total number of jobs decreased by 75 jobs, or 14 percent, from 2010 to 2017 (Bureau of Economic Analysis 2019).

Table 2-8. Full and part time employment in Bannock and Power County, 2010–2017

Sector	Bannock County			Power County			Total		
	2010	*2015*	*2017*	*2010*	*2015*	*2017*	*2010*	*2015*	*2017*
Farm employment	920	898	922	780	907	1013	1,700	1,805	1,935
Forestry, fishing, and related activities	(D)	(D)	(D)	214	(D)	260	214	(D)	260
Mining, quarrying, and oil and gas extraction	(D)	(D)	(D)	19	21	30	19	21	30
Utilities	130	119	137	(D)	16	(D)	130	135	137
Construction	2,663	2,236	2,699	100	103	105	2,763	2,339	2,804
Manufacturing	2,344	1,973	2,381	1,084	1,007	1,029	3,428	2,980	3,410
Wholesale trade	1,125	1,234	1,221	(D)	247	244	1,125	1,481	1,465
Retail trade	5,315	5,662	5,607	272	243	(D)	5,587	5,905	5,607
Transportation and warehousing	1,386	1,445	1,361	292	284	276	1,678	1,729	1,637
Information	534	510	459	(D)	(D)	(D)	534	510	459
Finance and insurance	2,175	2,737	2,592	66	61	76	2,241	2,798	2,668
Real estate and rental and leasing	1,663	1,697	1,796	121	(D)	(D)	1,784	1,697	1,796
Professional, scientific, and technical services	1,768	1,997	2,020	58	71	72	1,826	2,068	2,092
Management of companies and enterprises	226	566	784	(D)	15	19	226	581	803
Administrative and support and waste management and remediation services	2,463	2,513	2,285	(D)	59	87	2,463	2,572	2,372
Educational services	522	577	604	(D)	(D)	(D)	522	577	604
Health care and social assistance	5,825	6,437	6,482	77	(D)	(D)	5,902	6,437	6,482
Arts, entertainment, and recreation	845	928	982	(D)	(D)	(D)	845	928	982
Accommodation and food services	3,316	3,374	3,722	(D)	(D)	(D)	3,316	3,374	3,722
Other services (except government and government enterprises)	2,187	2,189	2,172	166	152	163	2,353	2,341	2,335
Government and government enterprises	8,419	8,871	8,732	709	642	660	9,128	9,513	9,392

Source: Bureau of Economic Analysis 2019.
(D) = Withheld to avoid disclosure of confidential information.

Idaho

The total labor force in Idaho grew by 10 percent, or over 73,400 people, between 2010 and 2017. During the same time period, the number of people employed increased by 17 percent, approximately 15,000 jobs (Bureau of Labor Statistics 2019). Employment in the accommodation and food service industry experienced the largest relative increase (29 percent) and net increase (15,554 jobs) between 2010 and 2017. Only the information sector experienced a decline in employment (-6 percent) between 2010 and 2017 (Bureau of Economic Analysis 2019).

Bannock County

Bannock County accounted for 91 percent of the total employment in the SESA in 2017. Employment increased by 6 percent between 2010 and 2017, while the unemployment rate decreased by 4.9 percent (Bureau of Labor Statistics 2019). Management of companies and enterprises experienced the largest relative increase over the 8-year time period (247 percent), and health care and social assistance experienced the largest net increase in jobs (657). Industries that experienced declines in employment included transportation and warehousing, information, administrative and support and wage

management and remediation services, and other services, except government (Bureau of Economic Analysis 2019).

Power County

Employment in Power County increased by 9 percent between 2010 and 2017. During the same time period, the unemployment rate decreased by 5.8 percent (Bureau of Labor Statistics 2019). Farm employment experienced the most rapid growth in employment during this time period (30 percent, or 233 jobs). Industries that experienced declining employment, and had employment data available for 2010 and 2017, include manufacturing, transportation and warehousing, other services except government, and government enterprises (Bureau of Economic Analysis 2019).

Fort Hall Reservation

Employment on the Fort Hall Reservation increased by 5.3 percent between 2010 and 2017. During the same time period, however, the unemployment rate increased by 6.6 percent (USCB 2017b). This increase is likely a product of the overall labor force increasing by over 14 percent over that period (309 members of the labor force). Arts, entertainment, and recreation and accommodation services experienced the most rapid growth in employment during this time period (118 percent, or 233 jobs) and retail trade had the second highest net growth (73 percent, or 69 jobs). Industries that experienced declining employment include transportation and warehousing and utilities, manufacturing, and educational services and health care (USCB 2017b).

2.3.2 Income and Poverty

Income and poverty data are presented in Table 2-9. The real (adjusted for inflation) median household income for Idaho increased by 24 percent between 2010 and 2017. During that same period, real median household income in Bannock and Power Counties increased by 19 and 31 percent, respectively (USCB 2017d).

Idaho estimates for real personal per-capita income increased 48 percent across the state between 2000 and 2017 (Bureau of Economic Analysis 2019). Personal per-capita income in 2017 in Idaho was $41,826, while personal per-capita income in the SESA grew 43 percent in Bannock County and 41 percent in Power County between 2010 and 2017 (Table 2-9).

The poverty rate in Idaho decreased between 2010 (15.8 percent) and 2017 (12.6 percent). Poverty rates in the SESA in 2017 were 14.2 percent in Bannock County and 14.6 percent in Power County (Table 2-9). Both counties experienced a similar decrease in the poverty rate: a 2.1 percent decrease in Bannock County, and 1.8 percent decrease in Power County (USCB 2019f).

Table 2-9. Income and Poverty, 2010–2017

Location	Median Household Income (2017 Dollars)			Personal Per Capita Income (2017 Dollars)			Poverty Rate (%)		
	2010	*2015*	*2017*	*2010*	*2015*	*2017*	*2010*	*2015*	*2017*
Idaho	$41,202	$45,988	$50,985	$28,331	$38,447	$41,826	15.8	14.7	12.6
Bannock County	$39,804	$42,312	$47,390	$25,896	$33,497	$36,987	16.3	22.3	14.2
Power County	$36,250	$43,278	$47,602	$26,140	$33,830	$36,969	16.4	14.1	14.6
Fort Hall Reservation	$37,297	$41,532	$42,808	$15,346	$16,598	$17,148	20.8	20.0	21.9

Sources: Median household income data from USCB 2017b. Personal per-capita income data from USCB 2017b and Bureau of Economic Analysis 2019. Poverty rate data from USCB 2017b and USCB 2019f.

2.3.3 Industry Market Conditions

2.3.3.1 Mining

In 2017, the mining industry supported 30 jobs in Bannock and Power Counties. Although mining is a relatively small supplier of jobs in the SESA, the proportion of jobs in the mining industry for the entire state of Idaho is more substantial. According to a 2017 study by the National Mining Association, there were 3,210 mining workers in the state, who directly contributed nearly $1.3 billion to the state gross domestic product. The majority of mining workers were non-metallic mining workers (2,672), followed by metal mining workers (477) and coal mining workers (61) (National Mining Association 2018).

Phosphate mining in particular has been an important industry in southeastern Idaho since the early 1990s. Today the region is still an important contributor to the phosphate market, supplying approximately 22 percent of the nation's phosphate and 4 percent of the world's phosphate. As of July 2019, the BLM oversees 86 active phosphate leases on 44,000 acres in southeastern Idaho. Simplot is the operator of one of the three active, large open-pit phosphate mines on BLM-administered Federal mineral leases (BLM 2019a).

In 2014, direct mining employment estimates for the state of Idaho ranged from 4,894 by the Bureau of Economic Analysis to 2,419 by the Quarterly Census of Employment and Wages, excluding employment related to oil and gas mining. Mine processing is a particularly important component of phosphate mining and is used to manufacture fertilizers. The industry employed anywhere from 2,787 workers according to the Bureau of Economic Analysis, which included broadly all chemical manufacturing, to 944 workers according to the Quarterly Census of Employment and Wages, which included only agricultural chemical manufacturing. During this time period, mining jobs were among the highest-paying industrial and service jobs in the state. Average earning per worker, including salary and fringe benefits, was $100,738 in 2014 for Idaho Mining Association workers (Idaho Mining Association 2015).

According to an economic impact study published by the Idaho Mining Association in 2015, Idaho Mining Association member firms, who represent over 80 percent of the state mining industry, supported over $1.2 billion of gross state product in 2014, including indirect and induced impacts. The industry also added $551 million in employee compensation and supported 9,193 jobs. A total of 2,946 of those jobs were directly supported by Idaho Mining Association firms, and the rest were generated through the multiplier effect of mining activity and mine processing. This multiplier effect is significant for three reasons. First, mining workers receive relatively high wages, which leads to increased spending and downstream impacts. Second, there are deep links between Idaho Mining Association firms' activity and Idaho's economy from the products and services Idaho Mining Association firms purchase from local businesses. Third, mining processing, specifically fertilizer manufacturing, has particularly robust multipliers due to the industry's deep backward economic linkages. The tax revenue contributions of Idaho Mining Association firms are also significant. In 2014, members supported a total of $105.2 million in state and local tax revenue (Idaho Mining Association 2015).

2.3.3.2 Livestock Grazing

Livestock production levels reflect complex judgments on the part of producers regarding returns on management of their herds and the resulting impacts on their income. Actual net farm income is sensitive to many factors, including prices for livestock, the impacts of seasonal weather on the availability of forage on public and private lands, prices of additional feed and other inputs to production, government payments to agricultural producers, cost of capital, and many other factors. Table 2-10 compares the number of cattle operations and cattle in Bannock County, Power County, and the Fort Hall Reservation between 2012 and 2017.

Table 2-10. Total Cattle Operations and Cattle, 2017 and 2012

Area	Number of Farms with Cattle and Calves		Number of Cattle and Calves		Number of Cows and Heifers that Calved		Number of Beef Cows		Number of Milk Cows		Other Cattle	
	2017	*2012*	*2017*	*2012*	*2017*	*2012*	*2017*	*2012*	*2017*	*2012*	*2017*	*2012*
Bannock County	322	337	20,981	23,228	13,596	12,382	12,713	10,311	883	2,071	7,385	10,846
Power County	90	97	27,520	27,508	6,825	5,654	(D)	(D)	(D)	(D)	20,695	21,854
SESA	**412**	**434**	**48,501**	**50,736**	**20,421**	**18,036**	**NA**	**NA**	**NA**	**NA**	**28,080**	**32,700**
Fort Hall: Total	NA	98	NA	19,076	NA	NA	NA	8,462	NA	0	NA	10,614
Fort Hall: Operated by American Indians	NA	14	NA	1,238	NA	NA	NA	917	NA	0	NA	321
Idaho	10,076	10,957	2,435,137	2,397,541	1,101,801	1,063,786	497,984	485,025	603,817	578,761	1,333,336	1,333,755

Sources: U.S. Department of Agriculture 2017, 2014.
(D) = Withheld to avoid disclosing data for individual farms.
NA = Not available.

The Pocatello Field Office provided a 10-year average of billed animal unit months (AUMs) for lands administered by the BLM Pocatello Field Office within Bannock and Power Counties: Bannock County's 10-year billed average was 6,816 AUMs and Power County's 10-year average was 17,430 AUMs. This total is based on billed AUMs, not total AUMs available. Portions of Power County occur within the BLM Burley Field Office, but AUM and grazing fee records were not available for the Burley Field Office at the time this report was prepared. AUMs earn the Federal and local governments a grazing fee per AUM.

The direct economic value of cattle grazing in a specific area can be estimated based on the actual grazing use of the area in AUMs and the value of an AUM. According to Workman (1986), it takes 16 AUMs to produce a marketable cow. Therefore, the average value of an AUM can be estimated using data on the value of cattle production per bred cow and dividing by 16 and also adjusting for cow-calf operations. These calculations are shown in Table 2-11.

Table 2-11. Value of an AUM for Cattle Production, 2018

Parameter	2018 Value
Value of Production per Cow	$543.33
AUMs per Cow	16
Value of Production per AUM	$33.96
Cow-Calf Adjustment	1.2
Adjusted Value of Production Per AUM	**$40.75**

Sources: Value of production data from U.S. Department of Agriculture 2019. AUMs per cow from Workman 1986. Cow-calf adjustment from National Agricultural Statistics Service 2018.

Based on the 2017 Agricultural Census estimate of 48,501 cattle and calves in the SESA, grazing generates over $26.35 million (48,501 cattle and calves × $543.33 value of production) annually of direct economic value. The Federal lands considered for exchange support an estimated 70 AUMs, which yield $2,852.50 (70 × $40.75) annually of direct economic value. The AUMs within the non-Federal lands considered for exchange support an estimated 44.5 AUMs and would yield $1,813.38 (44.5 × $40.75); however, this value is not part of the BLM AUM allocation and fees because the BLM does not recognize forage value on private lands.

Grazing fees and surcharges from use of BLM-administered lands generate revenue for the Federal Government. Of this grazing revenue, 50 percent goes to the BLM Range Improvement Fund and is distributed to BLM District Offices according to their grazing receipts, 37.5 percent goes to the U.S. Treasury General Fund, and 12.5 percent goes to the state of origin and is distributed to local grazing boards. Grazing fees are set annually by the Secretary of the Interior according to the provisions of 43 Code of Federal Regulations (CFR) 4130.8-1. The fee is equal to the $1.23 base established by the 1966 Western Livestock Grazing Survey, adjusted by indices for the value of forage, beef cattle prices, and livestock production costs, and subject to a minimum fee of $1.35 per AUM. The Federal grazing fee for 2019 is $1.35 per AUM (BLM 2019c). The BLM adds a surcharge to the grazing fee bill for authorized grazing of livestock owned by persons other than the permittee or lessee. The 2019 surcharge rates for Idaho are $5.83 per AUM (BLM 2019b). As shown in Table 2-12, the 719 acres of Federal lands proposed for exchange yield 70 AUMs in the SESA and earn the Federal Government $94.50 annually. The BLM does not collect grazing fees for the non-Federal lands.

Table 2-12. AUMs by County and Grazing Fee

Revenues/Expenditures	Bannock County, ID	Power County, ID	SESA	2019 Grazing Fee in SESA
Pocatello Field Office	6,816	17,430	24,246	$32,732.10
AUMs within the Federal lands considered for exchange	21.3 (219 acres)	49.7 (510 acres)	70 (719 acres)	$94.50
Estimated AUMs within the non-Federal lands considered for exchange	44.5	0	44.5 (667 acres)	N/A

Source: BLM 2019d.

Currently, members of the Shoshone-Bannock Tribes are exercising treaty rights on Federal lands within the Pocatello Field Office for which they have one BLM grazing permit (#1102953). The grazing permit includes two grazing allotments: Rocks (#16086) and 2½ Mile (#06094). Use on the Rocks allotment consists of 436 cattle from 4/23 to 6/15. Use on the 2½ Mile allotment consists of 36 cattle from 5/10 to 10/18 and one horse from 5/10 to 11/15. Neither of these grazing allotments are located within the lands considered for exchange in the Blackrock Land Exchange EIS.

2.4 Fiscal Conditions

2.4.1 Local Taxes and Government Expenditure

Table 2-13 summarizes the revenues and expenses of the SESA. The two counties vary in the presentation of values; therefore, not all categories are available.

Table 2-13. Revenues and Expenditures, Fiscal Year 2018

Revenues/Expenditures	Bannock County, ID	Power County, ID
Revenues		
Highway District	$3,486,725	$3,003,182
School Districts	NA	$4,912,745
Ambulance District	$3,782,952	NA
Fire Districts	NA	$273,270
Hospital District	NA	$2,046,092
Justice Fund	$12,483,781	NA
Other Taxes	$42,084,015	$15,525,557
Total Revenue	**$61,837,473**	**$25,760,846**
Expenditures		
Public Safety	$12,808,406	$2,053,274
School Districts	NA	$4,928,879
Highway District/Road & Bridge	NA	$3,007,696
Hospital District	NA	$2,041,119
Ambulance District	$3,542,671	$438,296
Emergency Services	$1,037,408	$97,659
Public Works/Roads	$5,821,932	$1,263,549
Health/Welfare/Sanitation	$10,657,024	$780,858

Revenues/Expenditures	Bannock County, ID	Power County, ID
Legal & Judicial	$9,590,910	$1,453,294
Education	NA	$24,850
Other	$16,429,323	$8,346,614
Total Expenditures and Fund Distribution	**$59,887,674**	**$24,436,088**

Sources: Bannock County 2018; Power County 2019.
NA = not available.

2.4.2 Property Taxes and Sales Taxes

The State of Idaho oversees local property tax procedures to make sure they comply with Idaho law; however, no property tax revenue goes to the State. The amount of property tax is based on the budget needs of the various taxing districts. These include local governmental units such as counties, cities, school districts, and fire districts. The part of the approved budget set to be funded by property tax revenue is divided by the total applicable taxable value of all properties within a district. The 2018 average property tax rates for Bannock County were 2.147 percent (urban) and 1.072 percent (rural), while the rates for Power County were 2.290 percent (urban) and 1.355 percent (rural). The urban property tax rates for both counties were significantly higher than the state average of 1.438 percent, while the rural rates for both counties were slightly lower than the state average of 0.951 percent (Idaho State Tax Commission 2019). Simplot paid approximately $3,916,307 in real property and personal property tax in 2018. Of that total, approximately $3,031,340 million (77.4 percent) was owed to Power County, $14,850 (0.4 percent) to Bannock County, and $870,116 (22.2 percent) to Caribou County. Approximately $397 in property tax was paid for the non-Federal lands considered for exchange. Although property tax revenue from the non-Federal lands would be lost if transferred into Federal ownership, Simplot would likely owe more in property tax after the proposed land exchange because it would owe property taxes on a larger total acreage.

The actual 2019 base and excess sales tax distribution was $1,225,295 for Bannock County and $210,896 for Power County. The current Idaho sales tax rate is 6 percent. Sales tax applies to the sale, rental, or lease of tangible personal property and some services. Idaho also has a use tax that is applied to goods that you put to use or store in Idaho, if sales tax was not paid on the purchase of the goods. The use tax rate is the same as the sales tax rate (6 percent).

2.4.3 Transportation Taxes

The State of Idaho imposes a fuel tax of $0.32 per gallon on gasoline and diesel. Fuel tax revenues support the building and maintenance of Idaho highways. Fuel sold from an Idaho Indian tribe or member do not have an Idaho fuels tax, but instead include a tribal fuel tax (Idaho State Tax Commission 2018).

As presented in Table 2-13, Power and Bannock Counties collected over $6 million in revenue from the highway districts and spent over $10 million on highway districts, public works, and roads.

The Shoshone-Bannock Tribes earned $735,000 from a fuel tax within the Fort Hall Reservation in 2015. The fuel tax revenues support transportation and underground storage tank monitoring. Tribal road maintenance accounted for 22 percent and the greatest proportion of 2016 appropriations (Shoshone-Bannock Tribes 2019d).

2.4.4 Federal Revenue

In 2017, mining, quarrying, and oil and gas extraction industries contributed $234.1 million to Idaho's state gross domestic product, or 0.34 percent of the state gross domestic product (Bureau of Economic Analysis 2019).

2.4.4.1 Payment in Lieu of Taxes

Payments in lieu of taxes are payments from the Federal Government to local governments to help compensate for lost property taxes resulting from tax-exempt Federal lands within the local jurisdiction. Payments in lieu of taxes are administered by the U.S. Department of the Interior and are made for lands managed by the BLM, National Park Service, and U.S. Fish and Wildlife Service as well as some Federal water projects and military installations. Local governments use payments in lieu of taxes to pay for various government services such as law enforcement and infrastructure. The payments are calculated based on acreage of eligible lands within the county, population, and other Federal transfers such as mineral royalties (U.S. Department of the Interior 2019). Table 2-14 provides the total payments in lieu of taxes made to the counties in 2018. These data are for all Federal lands and cannot readily be segregated by Federal land management agency.

Table 2-14. Payment in Lieu of Taxes, 2018

Geography	Payment in Lieu of Taxes	Acres of Federal Land	Price per Acre
Bannock County	$568,237	213,519	$2.66
Power County	$790,407	293,393	$2.69

Source: BLM 2019d.

2.5 Nonmarket Values

The term "nonmarket values" refers to the benefits individuals attribute to experiences of the environment or uses of natural and cultural resources that do not involve market transactions, and therefore lack prices. Nonmarket values are often overlooked in impact analyses as a result of being difficult to assess or quantify. Nevertheless, such values are important to consider because they help tell the entire economic story. Estimates of nonmarket values supplement estimates of income generated from commodity uses to provide a more complete picture of the economic implications of proposed resource management decisions. Nonmarket values can generally be classified into three categories:

- Direct use of the environment through recreation, education, or other activities on the landscape that provide nonmarket values. These uses can also result in market values if there are market transactions, such as payments of entry fees for outdoor recreation areas.
- Indirect use of the environment, such as the protection of watersheds to preserve surface water quality for downstream communities, or protecting scenic landscapes along historic trails to preserve cultural and historic settings.
- Passive use (sometimes called non-use) benefits, which can stem from a desire to preserve a resource as a social or public good (existence value), for future use or enjoyment by future generations. Although passive use values do not involve any actual current use of the environment, some of the value ascribed to them relate to possible future direct or indirect use of the environment.

Primary direct use nonmarket values in the SESA are associated with the general rural characteristics of the region (low traffic, low population density, appreciation of environmental and natural conditions, and available recreation opportunities). As discussed further below, recreation can generate important value within the SESA, both in terms of public enjoyment (nonmarket values) and regional economic activity (market values), including jobs, income, and sales tax revenues. According to the BLM's Recreation Management Information System,[1] the Pocatello Special Recreation Management Area (SRMA) received 48,116 visits from recreationists from October 1, 2017, to September 30, 2018, resulting in 59,390 visitor days spent on outdoor recreational activities. A visitor day is the standard unit of measurement for BLM activities, defined as aggregated 12-hour periods of time. The SRMA is composed of five recreation management zones and is managed for a range of non-motorized, mechanized, and motorized recreational opportunities.

Indirect use of the environment, such as protection of air and water quality and greenhouse gas mitigation, and the nonmarket values these services provide are closely related to management goals and objectives for physical resources such as air and water.

Although there are difficulties associated with measurement of nonmarket values, it is well accepted that open space and natural and cultural resources can have monetary values. For example, it is common for real estate investors to pay more for view lots or property adjacent to open space, or for people to make financial donations to help protect old-growth forests, endangered species, or other resources. Even when it is not possible to estimate nonmarket values, it is still helpful to discuss these values qualitatively or to provide examples of these values in analogous situations.

In examining nonmarket values, economists often distinguish between use values (both direct and indirect) and passive, or non-use, values due to the different ways in which these categories of values are experienced by people. The following subsections further describe use and non-use values and other values that are generally addressed within a nonmarket value framework.

2.5.1 Use Values

Economists measure nonmarket direct use values by estimating the "consumer surplus" associated with these activities, which is defined as the maximum dollar amount, above any actual payments made, that a consumer would be willing to pay to enjoy a good or service. For instance, hikers pay a market price for gasoline used to reach a trail, but pay nothing to use the trail. Any amount that a recreationist would be willing to pay to use this otherwise free resource represents the nonmarket consumer surplus value of that resource to that consumer. There are many techniques for measuring this nonmarket use value. One common way is to collect data on variations in what recreationists do pay (gasoline, hotels, restaurants, entry fees, guides or outfitters, etc.); economists then use quantitative techniques to impute the additional willingness to pay that constitutes consumer surplus.

Nonmarket use values have been studied for valuing a wide variety of recreation "goods." To help the reader understand the potential nonmarket value of the SESA's natural and cultural resources, Table 2-15 summarizes average nonmarket use values for recreation activities for the Intermountain Region, according to the Recreation Use Values Database maintained by the Oregon State University College of Forestry (Rosenberger et al. 2017).

[1] *The Recreation Management Information System enables BLM employees to estimate recreation participation on BLM lands in 65 types of recreational activities.*

Table 2-15. Average Recreational Use Values for the Intermountain Region, per person per day (2016$)

Activity	Use Value
Backpacking	$42.81
Biking	$96.40
Cross-County Skiing	$66.18
Developed Camping	$45.27
Downhill Skiing	$91.88
Fishing	$81.18
Hiking	$94.12
Hunting	$87.07
Motorized Boating	$68.03
Nature Related Activities	$69.79
Non-motorized Boating	$118.59
Off-highway Vehicle Use	$60.11
Other Recreation	$74.66
Picnicking	$58.83
Weighted Average	$77.04

Source: Rosenberger et al. 2017.

By applying values in Table 2-15 to recreational use figures, or by applying values from specific individual studies that are most comparable to the SESA, an estimate of the recreation-related nonmarket use value—the consumer surplus—can be derived for the SESA. The resulting figure would represent the total nonmarket use value that recreationists derive from these activities or, alternatively, it could be seen as the total additional amount recreationists would likely be willing to pay for the related recreational activities if a fee for participation were required. Those who are accustomed to free access and use of public land tend to forget that it represents a recreational opportunity and experience for which many would be willing to pay.[2] This type of calculation must be done carefully, with great attention to the reliability of the recreational usage numbers and the validity of the consumer surplus values derived from the literature. The results must also be carefully interpreted, because consumer surplus estimates are not directly comparable to estimates of income derived from commodity uses (BLM 2013).

2.5.2 Passive (Non-use) Values

Economists identify multiple types of non-use values of the environment, including option values, bequest values, and existence values. Option value represents the benefits derived from having natural or cultural resources available for an individual's own use in the future, while bequest value refers to the benefit derived from knowing that these resources are protected for the use of future generations. Additionally, existence value reflects the benefits derived from knowing these resources simply exist, regardless of any plans for future use of them. Existence value is most often associated with rare and scenic landscapes, or with rare or threatened species.

There is ample evidence to support the existence of the various categories of non-use values. For example, local, state, and national taxpayers support a large variety of conservation and

[2] *This observation is not meant to suggest that such fees should be charged. There are many philosophical and practical issues associated with charging fees for recreational use of public land.*

protection programs (such as national parks, state parks, local parks and parkways, and open space initiatives) through their tax dollars—programs that are very popular but support a wide range of resources that many taxpayers will never visit. Additionally, a large number of nonprofit organizations are devoted to a wide variety of conservation and wildlife-related causes; many if not most donors to these groups derive no direct benefit from their contributions. While evidence of non-use values is clear in the economics literature, estimating non-use values for specific resources is subject to many challenging methodological considerations. However, the BLM acknowledges that non-use values are real and can be substantial (BLM 2013).

2.5.3 Ecosystem Service Values

Nonmarket values[3] of open space and well-managed natural resources also include a broad range of human benefits resulting from healthy ecosystem conditions and functions. The benefits that humans derive from ecosystems are known as ecosystem services (Ruhl and Salzman 2007; De Groot et al. 2010), and these ecosystem services are commonly grouped into four broad categories based on how human beings interact with and derive value from them:

- **Provisioning Services** provide products that are used directly by people (e.g., food, water, and raw materials).
- **Regulating Services** are outputs from the normal functioning of ecosystems that benefit people in direct ways (e.g., regulation of climate, air and drinking water quality, soil formation and retention, moderation of extreme events, and biological control).
- **Supporting Services** are processes that are necessary for the production of other ecosystem services (e.g., habitat for plants and animals, conservation of genetic diversity, and cycling of nutrients).
- **Cultural Services** provide benefits to people through meaningful interactions with nature (e.g., aesthetic enjoyment, recreation, spiritual enrichment, and cognitive development).

The benefits that humans receive from ecosystem services can be categorized as use values and non-use values, as described above in Sections 2.5.1 and 2.5.2. Economists have developed a variety of methods and approaches for estimating the monetary values associated with ecosystem services. The ecosystem services framework encompasses the amenity, recreational, and other values discussed above. For purposes of this discussion, the emphasis is on the additional functional benefits ecosystems provide.

Ecosystem services can be ascribed a monetary value by employing one of three approaches:

1. **Conduct primary studies.** This option involves conducting original studies to estimate the value of nonmarket ecosystem services. Some nonmarket ecosystem service values can be estimated through revealed preference studies, which use observed or secondary data to infer the value of nonmarket ecosystem services. Economists also use stated preference methods to estimate nonmarket ecosystem service values, which involves asking people, in a survey setting, to ascribe a value to changes in the level of provision of ecosystem services. Primary studies are viewed as the

[3] *Note that confusion can arise regarding the difference between ecosystem service values and nonmarket values. A BLM instruction memorandum explains that "Ecosystem goods and services include a range of human benefits resulting from appropriate ecosystem structure and function, such as flood control from intact wetlands and carbon sequestration from healthy forests. Some involve commodities sold in markets, for example, timber production. Others, such as wetlands protection and carbon sequestration, do not commonly involve markets, and thus reflect nonmarket values" (BLM 2013, p. 2). There is a link between these two concepts in that nonmarket values are captured within the ecosystem goods and services framework, but evaluating nonmarket values does not require an ecosystem services approach.*

preferred method for ascribing value to ecosystem services, but they are costly in terms of both time and resources to conduct. It is therefore not always possible to conduct primary studies for the purpose of estimating nonmarket values of ecosystem services.

2. **Benefit transfer approaches.** Benefit transfer methods involve taking the values of ecosystem services estimated in one context and customizing and adapting them to apply to ecosystem services in another context. The simplest approach to benefit transfer involves simply taking the original value and applying it in a new context. A preferred and more detailed approach involves utilizing the function that was used to estimate benefits and adapting that function to fit the new study conditions. This approach, called benefit function transfer, is preferred over the simpler benefit value transfer approach because it allows for more customization of the benefit values to match the new study context.
3. **Qualitative approaches.** In some cases, it is not possible to estimate the value of nonmarket ecosystem services due to a lack of data or other analytical challenges. In these cases, it is often necessary to adopt a qualitative approach to evaluating the nonmarket values associated with ecosystem services.

Due to the time and resource constraints associated with conducting primary studies, ecosystem services are commonly valued by using benefit transfer methods to determine a per-acre monetary value. For the purposes of this brief survey of ecosystem services in the SESA, an accounting of the monetary value of ecosystem services was not feasible. Rather, this report focuses on providing context for some of the ecosystem services that are most relevant to the SESA and presents a range of potential values.

2.5.3.1 Provisioning Services

Provisioning services represent the products provided by ecosystem services that are most directly used by people. In the case of the SESA, this includes traditional uses of the area, such as grazing. Livestock grazing in the SESA can be viewed as a small-scale commercial operation and can be valued based on the market price and number of livestock. Other uses of the SESA are predominantly recreational (e.g., prospecting and fishing) rather than commercial operations.

2.5.3.2 Regulating Services

Regulating services represent the output from the normal function of ecosystems that people benefit from either directly or through indirect means. These functions include air, water, and climate regulation; waste treatment; biological control; and water quality. The most important regulating services to the SESA are climate regulation and air quality.

Climate regulating services include both the sequestration and storage of carbon dioxide from the atmosphere by the vegetation in the SESA. The value of this carbon removal is highly dependent on the type of vegetation (flora with larger mass such as trees sequester and store more carbon). For example, for an acre of forested land the value of annual carbon sequestration can range from $6 to $18 compared to grassland values of $0 to $13.[4] These values represent the benefit of preventing long-term climatic change from altering the climate and weather patterns of the region.

[4] *These per-acre estimates are based on benefit value transfer of carbon sequestration rates of land types (Batker et al. 2014). Values have a wide range based on the variability of primary literature. This phenomenon is well cited*

Similarly, air quality regulation represents the value of clean air resulting from the filtering of particulate matter, sulfur dioxide, nitrogen oxide, and other air pollution by trees and other vegetation. Similar to climate regulation, the per-acre value of air regulation varies widely, depending on the land type and the study referenced. Estimates for the value of air regulation vary from $158 to $200 for forested land to $4 to $5 for grassland.[5] These values represent the benefits that visitors and the local population would receive due to improved air quality.

Additionally, regulating services include the value of clean water that results from waste treatment and water filtration.

2.5.3.3 Supporting Services

Supporting ecosystem services represent those processes that are necessary for the production of other ecosystem services. Supporting services provide inputs to other categories of ecosystem services, including provision of refuge and reproductive habitat to wild plants and animals, formation of soil, nutrient cycling, and primary productivity. Due to the importance of the SESA as a recreational resource, ecosystem services that support plant and animal habitats are of particular relevance. Additionally, healthy habitats bolster fish populations and grasslands that allow for thriving fishing and grazing opportunities.

The value ascribed to biodiversity and habitat can vary widely based on study location and topic. Valuation models, such as InVEST,[6] value habitat quality based on forecasted threats such as development and land cover conversion and decay rates. Additionally, supporting ecosystem services are often not valued directly by economists because these services are viewed as intermediate services that support ecosystem services in other categories to which economists do ascribe a value. Valuing both the intermediate service and the end service that this intermediate service supports would result in double-counting. For example, the value of supporting services associated with habitat is generally valued through the end uses of habitat, such as the provision of timber, food, and fuel, or the provision of recreational amenities through wildlife viewing or consumptive uses such as hunting.

2.5.3.4 Cultural Services

Cultural services provide meaningful interactions between human beings and nature, including aesthetic enjoyment, cultural and artistic inspiration, science and education, and spiritual and historical purposes. Cultural service values for recreation for activities occurring in the SESA were estimated using nonmarket values and visitation data from BLM's Recreation Management Information System. As noted above, the Pocatello SRMA received 48,116 visits on an annual basis, resulting in 59,390 visitor days spent on outdoor recreational activities. Using the estimated annual number of visitor days and the weighted average recreational use value for the Intermountain Region of $77.04 results in an annual value of $4.6 million (55,390 × $77.04) for cultural ecosystem services provided by recreation in the Pocatello SRMA. This estimate can be viewed as a lower boundary of the value of ecosystem services

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by economists and great care is recommended when conducting benefit function and benefit value transfer to find primary literature sources that estimate values for local regions or identical land types (e.g., deciduous versus evergreen forest) to ensure accuracy of monetized estimates.

[5] *Air regulation value estimates for forested land taken from Wilson (2008) and Wilson (2010). Meanwhile, estimates for grassland are from Wilson (2008) and Anielski and Wilson (2010).*

[6] *Additional information about the InVEST model is available online at: http://data.naturalcapitalproject.org/nightly-build/invest-users-guide/html/*

provided by the SESA, as it considers only a subset of services (recreation) in a specific area and does not also consider the value of other cultural services or values/services specific to Shoshone-Bannock Tribes Cultural and Customary activities.

2.5.4 Tribal Treaty Rights and Tribal Resources

The National Historic Preservation Act and its implementing regulations (36 CFR 800) require consultation with federally recognized Indian tribes to identify traditional cultural properties and consider potential effects on such properties because of a Federal undertaking. In addition, the American Indian Religious Freedom Act, Executive Order 13175, "Consultation and Coordination with Indian Tribal Governments,"[7] and Executive Order 13007, "Indian Sacred Sites,"[8] contain requirements for consulting with tribes on the potential effects of Federal actions on tribal interests. Traditional cultural properties are cultural sites of religious or cultural importance that may also be eligible for the National Register of Historic Places because of their importance in the traditions and cultural identity of a cultural group. Areas of traditional use may include areas used to gather plants, animals, or fish for subsistence or for ceremonial or medicinal purposes. The National Parks Service's National Register Bulletin No. 38 provides guidance for identification and evaluation of such traditional cultural properties and traditional use areas (36 CFR 800; executive orders 13007, and 13175; National Park Service 2012).

In the 1868 Fort Bridger Treaty between the U.S. and the Shoshone and Bannock Tribes, the tribes reserved the right to hunt, fish, gather, and exercise other traditional uses and practices on unoccupied Federal lands. In addition to these rights, the Shoshone and Bannock Tribes have the right to graze tribal livestock and cut timber for tribal use on those lands of the original Fort Hall Reservation that were ceded to the Federal Government under the Agreement of February 5, 1898, ratified by the Act of June 6, 1900. The proposed exchange lands are within the area ceded to the Federal Government under the Agreement of February 5, 1898 (Agreement with Shoshone and Bannock Indians of the Fort Hall Reservation, Idaho, 1900; Shoshone-Bannock Tribes 2019e).

The current boundary of the Fort Hall Reservation overlaps the northern sections of the SESA in Bannock and Power Counties. The Shoshone-Bannock Tribes continue to actively use the lands and resources outside of the reservation to the extent possible, retain traditions and connections with the lands, and maintain connections with sacred sites. These sacred sites include burials, rock art, monumental rock features, natural features, rock structures or rings, sweat lodges, timber and brush structures, eagle traps, and prayer and offering localities. Much of the landscape itself figures prominently in the identity and traditions of the native groups, and sacred places are not necessarily defined by archaeological remains (BLM 2018). Other tribal resources associated with the Federal lands proposed for exchange include spring sites; camp sites; healing locations; battleground sites; hunting, fishing, and gathering locations; scenery and visual resources; and audio resources. The tribes also value landscape features in the Federal lands proposed for exchange including Howard Mountain and canyons surrounding the mountain that have long held significance for the Shoshone and Bannock Tribes (BLM 2019e).

The Federal Government has a unique trust relationship with federally recognized American Indian tribes, including the Shoshone and Bannock Tribes. The BLM has a responsibility and obligation to consider and consult on potential effects on natural resources related to the tribes' treaty rights, uses, and interests under the Federal laws, executive orders, and treaties noted above. Resources or issues of interest to the Shoshone-Bannock Tribes that could have a bearing on their traditional use or treaty rights include tribal historic and archaeological sites, sacred sites and traditional cultural properties,

[7] *65 Federal Register 67249, November 6, 2000.*

[8] *61 Federal Register 26771, May 24, 1996.*

traditional use sites, fisheries, traditional use plant and animal species, vegetation (including noxious and invasive, nonnative species), air and water quality, wildlife, access to lands and continued availability of traditional resources, land status, and the visual quality of the environment.

The Pocatello Field Office's Forestry Program issues free use permits to members of the Shoshone-Bannock Tribes for wood products (firewood, tepee poles, or Christmas trees) and greenery (plants). From 2013 to the present, approximately 16 tribal free use permits have been issued (16 for wood products and one for greenery); however ,the locations of use are not documented. Two yearly permits were issued in 2017 and one permit in 2018. The Pocatello Field Office values free use permits at $100. The permit does not limit the amount gathered under tribal use; as such, the amount gathered is not documented (BLM 2019d).

As described in Section 2.3.3.2 (*Livestock Grazing*), members of the Shoshone-Bannock Tribes have one livestock grazing permit (#1102953) with two allotments where treaty rights are exercised on Federal lands within the Pocatello Field Office. Neither of these grazing allotments are located within the lands considered for exchange in the Blackrock Land Exchange EIS.

The BLM recognizes the Shoshone-Bannock Tribes Policy for Management of Snake River Basin Resources including the tribes' determination to pursue and promote efforts to restore the Snake River systems and affected unoccupied lands to a natural condition and their desire to ensure the protection, preservation, and enhancement of tribal treaty rights and interests. Government-to-government consultation between the BLM and Shoshone-Bannock Tribes is ongoing to identify any sacred sites or other tribal resources that may be present on the lands considered for exchange. Sacred sites have been identified on other lands in the SESA through prior government-to-government consultation, but the locations and characteristics of these sites are typically not disclosed.

In meetings and comments with the BLM, members of the Shoshone-Bannock Tribes have expressed concern about the effects of past and ongoing operations of the Don Plant and proposed expansions on the lands, waters, and inhabitants of the Fort Hall Reservation. Fish is an important component of tribal diets. If water quality is adversely affected by planned facilities on the Federal lands, it could have negative impacts on the health of tribal members. In the past, there have been health advisories in Fort Hall Bottoms and American Falls Reservoir due to high levels of mercury. The tribes have also raised concerns regarding levels of selenium and mercury in plants on the Fort Hall Reservation, and potential adverse effects on bison, horses, and cows that graze the tribal lands. Tribal staff requested that a study be conducted to determine the impacts of glyphosates and phosphates from fertilizer manufacture at the Don Plant on water quality in the Portneuf River. The tribes have also expressed concerns about wildlife displacement, culturally significant areas, such as burial sites, and decreased land values resulting from the proposed Blackrock Land Exchange (BLM 2019f).

3.0 ECONOMIC MODELING

This section describes the methods, processes, and results of the regional economic modeling for the Blackrock Land Exchange EIS. IMPLAN (IMpact Analysis for PLANning) is one of the most widely used input-output modeling systems in the United States (IMPLAN Group LLC 2019), and it was used to estimate the economic impact for the Proposed Action that will be analyzed in the Blackrock Land Exchange EIS. IMPLAN is a regional economic model that provides a mathematical accounting of the flow of money, goods, and services through a region's economy—for this analysis, the region is Bannock and Power Counties, Idaho.

3.1 Key Concepts and Terminology

A variety of tools are available to estimate regional economic impacts, but by far the most widely used today are input-output models. These models are generally static input-output models used to analyze the effects of an economic stimulus (in the form of a specific policy or project) on an economic region. Regional economic models are called input-output models because the inputs (purchases) of one industry represent the outputs (sales) of other industries. Input-output models such as the IMPLAN model provide a quantitative representation of the production relationships between individual economic sectors and provide estimates of how a specific economic activity translates into jobs and income for the region.

Expansion of phosphate processing operations and construction of cooling ponds on the Federal lands to support Simplot's ongoing operation of the Don Plant is a reasonably foreseeable effect of the proposed Blackrock Land Exchange. Construction and operation of these facilities would represent a new source of demand for local materials and generate local employment and income. Supply linkages between different sectors of the economy allow some local businesses to meet some of the needs associated with the facilities as well as the consumer needs associated with workers directly employed by Simplot and with workers employed by vendors in the supply chain. These supply linkages and local worker expenditures represent a secondary source of local employment and income. The various rounds of local expenditures and earnings followed by additional expenditures and earnings affect many sectors of the local economy and result in total generated employment and income that is a multiple of the original direct increase in demand for labor and materials. Public sector revenues are also affected in the form of increased tax collections. Economists use economic modeling to describe the supply and demand linkages between the economic sectors that can be used to estimate the total effects of a direct increase in demand. These impacts are known as "multiplier effects." The three primary categories of multiplier effects are the following:

- **Direct** – Direct effects represent the impacts due to the investments that result in final demand changes.
- **Indirect** – Indirect effects represent the impacts due to the inter-industry linkages caused by the iteration of industries purchasing from other industries, brought about by the changes in final demands.
- **Induced** – Induced effects represent the impacts on all local industries due to consumers' consumption expenditures arising from the new household incomes that are generated by the direct and indirect effects of the final demand changes.

3.2 IMPLAN Description

The IMPLAN model is created and maintained by the Minnesota IMPLAN Group and was developed in the 1970s through a collaboration with the U.S. Department of Agriculture, Forest Service and the University of Minnesota (IMPLAN Group LLC 2019). The IMPLAN model is constructed with data from the U.S. National Income and Product Accounts and the Bureau of Economic Analysis, among a variety of other data sources. The model includes 536 industry sectors based on the North American Industry Classification System. The IMPLAN support team annually updates county-level databases that report such attributes as:

- Industries present in the regional economy
- Output, employment, and income levels accounted for by each industry
- The main sources of residents' incomes

- Inter-industry commodity purchases
- The shares of inter-industry inputs purchased locally
- Industries that produce commodities exported from the region (i.e., that compose the region's economic base)

The model uses region-specific multipliers to trace and calculate the flow of dollars from the industries that originate the impact on supplier industries. The results of this analysis are reported using commonly used metrics, consistent with best practices. A summary of each metric is provided below:

- Employment:[9] Represents the jobs created by industry, based on the output per worker and output impacts for each industry
- Labor Income: Includes all forms of employment income, including employee compensation (wages and benefits) and proprietor income
- Value added or Gross State Product: The difference between an industry's total output and the cost of its intermediate inputs; is the state-level counterpart to gross domestic product
- Industry Activity: Represents the total economic output generated by the direct spending
- State and Local Tax: Represents the estimated tax revenue from the activity

This analysis used IMPLAN data for Bannock and Power Counties, Idaho, from 2016, the most recent year for which data were available when the analysis was conducted. Data were processed using IMPLAN Version 3.1 software (IMPLAN Group LLC 2019).

3.3 Methodology

IMPLAN provides a systematic methodology for analyzing scenarios that represent the direct economic output or employment effects associated with specific management actions. The economic impact analysis evaluates two scenarios: the No Action Alternative (the land exchange is not approved) and the Proposed Action (the proposed land exchange is approved and the reasonably foreseeable actions occur on the exchanged lands). The 2016 IMPLAN model represents the most recent update of the model at the time the EIS was prepared. The gross regional product or value added for the SESA economy was approximately $3.42 billion according to the IMPLAN model year 2016 data. Each transaction table in IMPLAN contains 536 economic sectors and allows users to estimate a variety of economic statistics. The most relevant measures for understanding the economic impacts on the region resulting from the proposed land exchange are employment, labor income, industry activity, and tax revenue changes.

3.4 The Economic Region

The region for analyzing the economic impacts of the proposed land exchange was the SESA. The proposed exchange lands are in both Bannock and Power Counties, and project-related purchases of goods and services would occur in both counties. Bannock County has a larger and more diverse economy than Power County, so substantial inputs are expected to be obtained from Bannock County. By analyzing both counties as a single region, the SESA economy is more robust. This means more of the economic impacts would be felt in the SESA as opposed to "leaking out" to the surrounding regions.

[9] *Due to the static nature of the IMPLAN model, the employment impacts are presented in terms of annual job-years as the model calculates the annual impact of annual activity. It is likely that once the job is created, it will be sustained; however, to ensure that the impact is not overstated, it is conservatively assumed that the job impact is annual.*

3.4.1 No Action Alternative

If the proposed land exchange is not approved, this analysis assumes that there would be no change from current operations and capital investment activity at the Don Plant. Currently, there are 365 employees at the Don Plant, and 21 employees at the Frontier building, an associated facility. Simplot estimates that 91 percent of these employees reside in Bannock and Power Counties. Under the No Action Alternative, Simplot would spend an estimated $10 million on facility operations and maintenance, and $38.5 million in capital investment on a new facility (Simplot 2019). Table 3-1 shows the direct spending under the No Action Alternative.

Table 3-1. Direct Spending Activity under the No Action Alternative

Activity	No Action Alternative
Operational Expenditures	
Don Plant employment	365
Associated facility (Frontier building) employment	21
Facility operations and maintenance costs	$10,000,000
Capital Expenditures	
Construction of new facilities	$38,514,750

Source: Simplot 2019.

3.4.2 Proposed Action

If the land exchange is approved, there would still be no change in operational employment, but there would be an increase in operational and capital expenditures. The Proposed Action would increase operational expenditures by $2.25 million. Because the Proposed Action would result in the construction of new facilities, the capital costs of the Proposed Action would be at least $182.6 million more than the No Action Alternative (Simplot 2019). Table 3-2 shows the direct spending under the Proposed Action.

Table 3-2. Direct Spending Activity Under the Proposed Action

Activity	Proposed Action
Operational Expenditures	
Don Plant employment	365
Associated facility (Frontier building) employment	21
Facility operations and maintenance costs	$12,250,000
Capital Expenditures	
Construction of new facilities	$221,158,750

Source: Simplot 2019.

3.5 Results

3.5.1 Key Economic Effects

The key economic measures estimated for this study were employment, employee compensation, and total economic output for the No Action Alternative and Proposed Action scenarios. Direct, indirect, induced, and total effects were estimated for each of the key measures, for each expenditure type, and for each project alternative. Direct effects were derived from project expenses and staffing information

provided by Simplot. Indirect, induced, and total effects were generated by the IMPLAN model, as described above.

3.5.2 Comparison of Alternatives

3.5.2.1 No Action Alternative

According to Simplot, operational expenditures would total to $10 million and include 386 employees, and capital expenses would be over $38.5 million if the land exchange is not approved. Results of the IMPLAN analysis for this alternative are shown in Table 3-3. Under the No Action Alternative, the Don Plant and its associated facilities would support 1,704 jobs, $86.5 million in labor income, $519.3 million in regional output (value added), and $132.4 million in contributions to the gross state product annually in the SESA. Overall, each Simplot employee would produce an average of nearly $304,690 in total output. Additionally, $16.59 million in State and local tax revenue would be contributed to the region.

Table 3-3. Annual Regional Economic Effects and Multipliers for the No Action Alternative

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	711	$44.8	$63.7	$372.8
Indirect Effect	600	$28.1	$44.2	$99.8
Induced Effect	393	$13.6	$24.5	$46.7
Total Effect	1,704	$86.5	$132.3	$519.3
Multiplier	2.4	1.9	2.1	1.4

Note: Values generated through IMPLAN analysis. Employment figures are rounded to the nearest whole job. Monetary values in millions of 2017 dollars per year.

While the employment impact of capital expenditures is higher than operations, operations have a higher impact by all other measures. The jobs multipliers for the operational costs are relatively large, and the indirect job effect is much larger than the induced effect, primarily because of the high estimated productivity of Simplot workers. As a result, the Simplot workforce would generate a relatively large number of jobs in industries affected by commodity purchases (the indirect effect), but much fewer additional jobs would be generated by the workforce's aggregate personal consumption expenditures (the induced effect). As shown in Table 3-4, one direct operational job would support 3.2 jobs in the region through indirect and induced effects, while one direct capital job would support 1.4 regional jobs.

Table 3-4. Annual Regional Economic Effects and Multipliers for Each Cost Category under the No Action Alternative

Impact Type	Employment		Labor Income		Total Value Added		Output	
	Operations	*Capital*	*Operations*	*Capital*	*Operations*	*Capital*	*Operations*	*Capital*
Direct Effect	404	308	$31.3	$13.5	$45.3	$18.4	$336.1	$36.7
Indirect Effect	561	39	$26.4	$1.7	$41.6	$2.6	$94.3	$5.5
Induced Effect	310	83	$10.8	$2.8	$19.4	$5.1	$37.0	$9.8
Total Effect	1,275	429	$68.5	$18.0	$106.2	$26.1	$467.4	$51.9
Multiplier	3.2	1.4	2.2	1.3	2.3	1.4	1.4	1.4

Note: Values generated through IMPLAN analysis. Employment figures are rounded to the nearest whole job. Monetary values in millions of 2017 dollars per year.

3.5.2.2 Proposed Action

For the Proposed Action, employment levels would remain consistent, but operational and capital expenditures would increase by $2.25 million and $182.6 million, respectively. Therefore, the total economic impact of the Proposed Action is approximately two times higher than the No Action Alternative scenario. The Proposed Action would support over 2,000 more jobs, $86 million of labor income, and $249 million of regional output. Additionally, over $25.5 million in State and local tax revenue would be supported by the Proposed Action. Results of the IMPLAN analysis for this alternative are shown in Table 3-5 and Table 3-6, below.

Table 3-5. Annual Regional Economic Effects and Multipliers for the Proposed Action

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	2,185	$109.4	$152.0	$548.7
Indirect Effect	787	$36.1	$56.8	$126.1
Induced Effect	791	$27.2	$48.9	$93.5
Total Effect	3,763	$172.7	$257.7	$768.3
Multiplier	1.7	1.6	1.7	1.4

Note: Values generated through IMPLAN analysis. Employment figures are rounded to the nearest whole job. Monetary values in millions of 2017 dollars per year.

Because of increased capital investment under the Proposed Action, the total economic impact of capital spending is much higher than the impact of operational activity. Despite this, the multiplier impact of operations is still higher than that of direct capital activity because more of the impact is retained in the SESA. One direct operational job would support 3.1 jobs annually in the region, while one direct capital job would support 1.4 annual jobs.

Table 3-6. Annual Regional Economic Effects and Multipliers for Each Cost Category under the Proposed Action

Impact Type	Employment		Labor Income		Total Value Added		Output	
	Operations	*Capital*	*Operations*	*Capital*	*Operations*	*Capital*	*Operations*	*Capital*
Direct Effect	415	1,769	$31.8	$77.6	$46.0	$106.0	$337.9	$210.9
Indirect Effect	565	222	$26.6	$9.5	$41.8	$15.0	$94.7	$31.3
Induced Effect	314	478	$10.9	$16.3	$19.6	$29.3	$37.4	$56.1
Total Effect	1,294	2,469	$69.3	$103.5	$107.4	$150.3	$470.0	$298.3
Multiplier	3.1	1.4	2.2	1.3	2.3	1.4	1.4	1.4

Note: Values generated through ICF IMPLAN analysis. Employment figures are rounded to the nearest whole job. Monetary values in millions of 2017 dollars per year.

4.0 DIRECT AND INDIRECT IMPACTS

4.1 No Action Alternative

4.1.1 Social Conditions

Based on current staffing levels, the workforce of the Don Plant and associated Frontier building is approximately 386 full-time workers. Because Simplot operations are expected to continue as is in the short term, the No Action Alternative is not projected to affect staffing at the Don Plant or associated facilities. This means that no increase in population, effects on housing, or other social impacts (such as stresses on schools, public services, or utilities, or changes in quality of life) would occur. The SESA could see out-migration, increased vacancy rates, and decreased housing values if the land exchange is not approved and Simplot is forced to consider siting the gypsum stack farther away from the existing facility. This option would most likely require significant funding for construction and operation of a new pipeline to transport the phosphogypsum to an offsite gypsum stack. The increased cost associated with this scenario could require Simplot to scale down operations or shut down the Don Plant entirely for an unknown period of time.

4.1.2 Economic Conditions

In 2017, the SESA economy produced over 46,000 total jobs (USCB 2017b) and the average personal per-capita income was $36,978. The Fort Hall Reservation is economically depressed compared to the surrounding region; the average personal per-capita income was $17,148 and the poverty rate was 21.9 percent as of 2017 (USCB 2017b). Employment and labor income in the SESA reflect the ongoing operation of the Don Plant and associated Frontier building. Because the No Action Alternative would not change staffing, it is not anticipated to add direct, indirect, and induced increases in jobs, labor income, and output in the region during operations. Staff and expenditures associated with the No Action Alternative are the same as under the current plant operations and, therefore, the modeled annual economic impacts on the SESA are the same as those shown in Section 3.5.2.1 (*No Action Alternative*). However, because plant operations would likely have to shut down under the No Action Alternative, economic impacts modeled for the Don Plant would end sooner under this alternative.

4.1.2.1 Mining

As mentioned Section 2.3.3.1 (*Mining*), the Idaho mining and mine processing industry has been responsible for a significant portion of Idaho's economic growth over the last century. The industry provides jobs and materials that are important to the economy. In 2014, direct mining employment estimates for the state of Idaho ranged from 4,894 by the Bureau of Economic Analysis to 2,419 by the Quarterly Census of Employment and Wages, excluding employment related to oil and gas development. During this time period, mining jobs were among the highest-paying industrial and service jobs in the state. Average earning per worker, including salary and fringe benefits, was $100,738 in 2014 for Idaho Mining Association workers (Idaho Mining Association 2015).

Phosphate mining in particular continues to play a significant role in the southeastern part of the state. The region has some of the richest deposits of phosphate in the U.S., and it is Idaho's leading mineral commodity by value, supporting approximately $500 million in value added and 1,800 direct employees in southeastern Idaho (Idaho Department of Lands 2019).

Mine processing is one important component of phosphate mining and is used to manufacture fertilizers. The industry employed anywhere from 2,787 workers according to the Bureau of Economic Analysis, which included broadly all chemical manufacturing, to 944 workers according to the Quarterly Census of Employment and Wages, which included only agricultural chemical manufacturing (Idaho Mining Association 2015). The Don Plant employs 365 professionals, pays nearly $4 million each year in taxes to State and local governments, and produces over 1,000,000 tons of various phosphate products annually. A potential closure of the plant under the No Action Alternative would have a negative effect on the economy of the SESA.

4.1.2.2 Livestock Grazing

As stated in Section 2.3.3.2 (*Livestock Grazing*), the 719 acres of Federal lands proposed for exchange yield an estimated 70 AUMs in the SESA and earn $94.50 in annual grazing fees. Under the No Action Alternative, this is not anticipated to change. No Federal grazing fees would be assessed for the non-Federal lands, which would remain in private ownership.

The Federal lands currently yield an estimated $2,852.50 (70 × $40.75) annually of direct economic value, which is anticipated to continue under the No Action Alternative.

The AUMs within the non-Federal lands proposed for exchange are estimated to support 44.5 AUMs and would yield $1,813.38 (44.5 × $40.75); however, this value is not part of the BLM AUM allocation and fees because the BLM does not recognize forage value on private lands. Under the No Action Alternative, the availability of the non-Federal lands for grazing, and any associated economic value derived from grazing, would be at the discretion of Simplot, and has not yet been determined.

4.1.3 Fiscal Conditions

State and local taxes and fees would continue to be collected and would contribute to government revenue in the short term. The Don Plant and the related facilities would continue to pay approximately $3,916,306 in real property and personal property taxes. Because the plant operations would cease sooner under the No Action Alternative, taxes would be collected for fewer years than under the Proposed Action.

4.1.4 Nonmarket Values

This section discusses impacts other than those reflected in market transactions, also known as nonmarket values. Nonmarket value impacts depend on the proposed level of development and are closely related to social and quality-of-life impacts. The No Action Alternative would have minimal impacts on nonmarket values, as the non-Federal lands are and would remain unavailable for recreation or other uses by the public, as they are private land. In the case that the increased cost associated with siting a new gypsum stack farther away from the existing facility would require scaled down operations or plant shutdown for an unknown period of time, any impacts from noise, human presence, and visual disturbance would decrease. This could limit disturbance of wildlife and recreationists on BLM lands surrounding the mine and could increase direct and indirect nonmarket values associated with improved recreational experiences in the area and enhanced habitat for wildlife. Refer to Section 2.5 (*Nonmarket Values*) for more information on the types of nonmarket values.

4.2 Proposed Action

For purposes of this assessment, the Proposed Action includes the proposed land exchange and the potentially reasonably foreseeable actions that would occur on the Federal lands, including Simplot's expansion of gypsum stacks and the construction and operation of cooling ponds.

4.2.1 Social Conditions

The current workforce of the Don Plant and the Frontier building is approximately 386 full time workers. While this direct employment would remain unchanged under the Proposed Action, Simplot anticipates a significant increase in capital expenditure if the land exchange is approved and the reasonably foreseeable expansion of Simplot facilities onto the Federal lands occur. Total capital expenditures under the Proposed Action would be approximately $221,158,750. Operations and maintenance expenditure would also increase by approximately $2.25 million. This direct spending has a multiplier effect on the surrounding economic region. Increased employment associated with any new construction could increase the population of the SESA and affect housing, public services, or other quality-of-life issues.

As stated in Section 2.2.1 (*Population*), the population of southeastern Idaho, which includes the SESA as well as the counties of Bear Lake, Bingham, Caribou, Franklin, and Oneida, is projected to decrease through 2026 (Idaho Department of Labor 2018). This trend would likely counteract any population increase as a result of the Proposed Action, and would also likely ease any potential strain on housing availability, infrastructure, public services, and quality-of-life impacts associated with the Proposed Action. While the population of southeastern Idaho as a whole is decreasing, new projects like the Northgate District and Federal Bureau of Investigation expansion could spur population growth in urban centers such as Pocatello and Chubbuck.

The SESA has a number of existing vacant housing units for rent and seasonal use. According to the USCB, in 2017, Bannock County had a total of 33,870 housing units, of which 719 were vacant for rent and 660 were vacant for seasonal, recreational, or occasional use. Power County had a total of 2,992 housing units, of which 33 are vacant for rent and 53 are vacant for seasonal, recreational, or occasional use. The Fort Hall Reservation has 2,146 total housing units, of which 252 are vacant. While housing options in Power County may be more limited, the majority of existing Simplot workers live in Bannock County, which has enough existing vacant units that no severe housing impacts are anticipated from the Proposed Action. There is some concern that new development projects in the city of Pocatello could cause an increasing housing shortage in the areas around Pocatello and Chubbuck; however, a number of new housing units are currently being constructed as part of the Northgate project.

Impacts on community services in the SESA as a result of the Proposed Action are anticipated to be minimal. The public school districts of both counties have been running below capacity, and crime incidence rates have dropped over the last year and remain below the state average. No impacts on fire protection services, health care, utilities, or quality of life are anticipated as a result of the Proposed Action.

4.2.2 Economic Conditions

4.2.2.1 Mining

Economic effects were estimated using an IMPLAN model for the SESA, the results of which are presented in Section 3.5 (*Results*). The tables identify the direct, indirect, induced, and total effect on

employment, labor income, total value added, and industry activity in the analysis area. Refer to Section 3.0 (*Economic Modeling*) above for definitions of the types of effects and terminology referred to in this section. IMPLAN modeling input used to develop the results below consisted of ongoing employment at the plant, capital and construction expenditures in support of the project, including direct construction employment and contractors, as well as ongoing operations and maintenance of the plant.

The analysis shows that the Proposed Action would support approximately 3,763 total jobs, generate approximately $172.7 million in labor income, and contribute approximately $768.3 million in industry activity annually across the region. Continued operation of the Don Plant would extend the annual jobs economic impact compared to the No Action Alternative.

A breakdown of the total economic impact by direct, indirect, and induced effects of the Proposed Action can be found in Section 3.5.2.2 (*Proposed Action*). The indirect and induced effects of the two input categories can be summarized through a multiplier. As shown in Table 3-5, for every direct job added in the region due to direct spending, the multiplier generated through IMPLAN modeling indicates that approximately 1.7 jobs are created in the regional economy. For every dollar of direct labor income, approximately $1.6 of labor income is generated. Similarly, every dollar of direct industry activity creates an additional $1.4 in industry activity throughout Bannock and Power Counties.

4.2.2.2 Livestock Grazing

As stated in Section 2.3.3.2 (*Livestock Grazing*), the 719 acres of Federal lands proposed for exchange yield 70 AUMs and earn $94.50 in annual grazing fees. This grazing fee would be forgone if the Federal lands are transferred to private ownership under the Proposed Action. The Federal lands currently support an estimated $2,852.50 (70 x $40.75) annually of direct economic value. This economic value from livestock grazing would be forgone under the Proposed Action because the Federal lands would no longer be available for livestock grazing.

The BLM does not anticipate any change to the season of use, AUMs, or other grazing management for the Blackrock or Rapid Creek allotments resulting from acquisition of the non-Federal lands; therefore, the availability of the non-Federal lands for livestock grazing is not anticipated to have an economic effect.

4.2.3 Fiscal Conditions

The continuation of operations at the Don Plant, which would be enabled through the proposed land exchange, would ensure a long-term revenue source that would increase the county's capacity to provide public services for its residents. The Don Plant currently contributes $3.9 million annually in State and local taxes. While property taxes would continue to be collected for the Don Plant and Frontier building following its closure, sales and use taxes and income taxes from employees would not. The Proposed Action would delay the reduction in revenues from State and local taxes following plant closure compared to the No Action Alternative. Payment in lieu of taxes would continue to be collected for the non-Federal land following acquisition by the BLM.

4.2.4 Nonmarket Values

Effects on nonmarket values under the Proposed Action would be greater than those under the No Action Alternative because the Federal lands would be converted to an urban/industrial landscape character. Development on public land and the resulting impacts on the natural environment and

social/quality-of-life conditions could result in impacts on direct use, indirect use, and passive use nonmarket values (as defined in Section 2.5, *Nonmarket Values*).

Reasonably foreseeable actions on the Federal lands could result in direct-use impacts on nonmarket values by expanding the industrial character of lands within the existing Don Plant property to adjacent, undeveloped lands. Conversion of these lands to a more industrial landscape would diminish the recreational setting and opportunities in the area, such as wildlife viewing, sightseeing, and hunting. Because the Proposed Action would extend the life of the Don Plant compared to the No Action Alternative, noise and traffic from operation of the Don Plant would diminish the recreational setting and opportunities on adjacent public lands for a longer time.

Development of the Federal lands and resulting impacts on wildlife, visual resources, recreation, and other uses could also decrease passive use benefits that reflect nonmarket values.

As described in Section 2.5.3 (*Ecosystem Service Values*), the Pocatello SRMA received 48,116 visits on an annual basis, resulting in 59,390 visitor days spent on outdoor recreational activities. Using the estimated annual number of visitor days and the weighted average recreational use value for the Intermountain Region of $77.04 results in an annual value of $4.6 million (55,390 × $77.04) for cultural ecosystem services generated by recreation in the Pocatello SRMA. These values could decrease due to development of the Federal lands; however, the BLM has indicated that the Federal lands experience only occasional recreational use.

As noted under the No Action Alternative, some nonmarket values may increase after closure of the Don Plant due to the curtailment of traffic, noise, and other industrial activities that could diminish recreational setting on adjacent lands; however, the nonmarket values associated with recreational use of the Federal lands would be permanently lost.

5.0 ENVIRONMENTAL JUSTICE

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,"[10] established a requirement for Federal agencies to incorporate environmental justice considerations into planning and decision processes to help ensure that no person or group bears a disproportionate burden of adverse impacts. This section assesses potential environmental justice effects of the Proposed Action, with a focus on any disproportionately adverse impacts from environmental risk exposure on low-income and minority communities.

Environmental justice is analyzed within the SESA, with special emphasis given to the Fort Hall Reservation due to its proximity to the Federal lands proposed for exchange.

5.1 Laws, Ordinances, Regulations, Standards

5.1.1 Federal Law

Executive Order 12898 directs all Federal agencies to focus attention on the human health and environmental conditions for low-income populations, minority populations, or Indian tribes.[11] The purpose of Executive Order 12898 is to identify and address, as appropriate, disproportionately high and

[10] *59 Federal Register 7629, February 16, 1994.*

[11] *"Indian tribes" refers to any federally recognized Indian or Alaska Native tribes, bands, nations, pueblos, villages or communities that the Secretary of the Interior recognizes to be eligible for special programs and services provided by the U.S. to Indians because of their status as Indians (25 U.S. Code 479a).*

adverse human health or environmental effects on low-income populations, minority populations, or Indian tribes that may experience common conditions of environmental exposure or effects associated with a plan or project. Executive Order 12898 also requires Federal agencies to ensure opportunities for effective public participation by identified potentially affected low-income populations, minority populations, or Indian tribes that are considered low-income and minority populations.

5.1.2 Other Guidance and Recommendations

The Council on Environmental Quality issues guidance for considering environmental justice within the National Environmental Policy Act process (Council on Environmental Quality 1997) that will be used in this analysis. The Council on Environmental Quality suggests the following approach for identifying potential low-income and minority populations (Council on Environmental Quality 1997):

> Minority population: Minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.
> Low-income population: Low-income populations in an affected area should be identified with the annual statistical poverty thresholds from the Bureau of the Census' Current Population Reports, Series P-60 on Income and Poverty. In identifying low-income populations, agencies may consider as a community either a group of individuals living in geographic proximity to one another, or a set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect.

Council on Environmental Quality guidance does not specify how to identify a "low-income population," but in practice the same approach used for minority populations can be followed—where persons in poverty status are greater than 50 percent of the area's total population, or where the percentage in poverty is meaningfully greater than the percentage in the general population or an appropriate comparison area. Council on Environmental Quality guidance does not provide a specific threshold for determining when an area's population is "meaningfully greater." In practice, "meaningfully greater" is often interpreted to identify an environmental justice population if the percentage of population in minority and/or poverty status in an area is at least 10 percentage points higher than in the comparison area (e.g., greater than or equal to 19 percent population in poverty in a SESA geography compared with 9 percent population in poverty in the comparison area). This threshold has been used in many BLM resource management plans and EISs, and is based on experience evaluating environmental justice indicators, the potential for adverse impacts on environmental justice populations from BLM decisions, and the sense that this threshold represents a meaningful difference between the affected and comparison populations.

5.2 Existing Conditions

Table 5-1 summarizes existing conditions with respect to each resource indicator and measure, which are described in more detail in the sections that follow.

Table 5-1. Resource Indicators and Measures for the Existing Condition

Resource Element	Resource Indicator	Measure	Existing Condition
Population and demographics of potential minority and low-income communities	Presence of minority and low-income communities	Identification of minority or low-income populations based on multi-year trends in demographics by race or ethnicity	Power County and the Fort Hall Reservation are identified as potential minority or low-income communities.
Environmental risk exposure	Comparison of regions based on environmental and demographic indicators and environmental justice indices	Comparison of environmental indicators to national averages	Bannock County performed in the lower quartile of the nation on three environmental indicators: Ozone, Superfund Proximity, and Wastewater Discharge. Power County performed in the lower quartile of the nation on two environmental indicators: Ozone and Wastewater Discharge. Within the Fort Hall Reservation, two block groups performed in the lower quartile of the nation on three environmental indicators: Ozone, Superfund Proximity, and Wastewater Discharge.
Disproportionate impacts on minority and low-income communities	Potential for disproportionate impacts on minority and low-income communities	Varies	Refer to Section 3.18 (*Socioeconomics and Environmental Justice*) of the EIS

5.2.1 Minority and Low-Income Communities

Environmental justice impacts tend to be highly localized geographically and typically occur close to the activities causing the environmental effect. Examples of localized environmental justice impacts include noise or visual impacts associated with construction in or adjacent to residential neighborhoods with disproportionately large low-income or minority populations. However, in some cases, environmental justice impacts are relatively dispersed environmental impacts, such as air pollution affecting an entire air basin, where the entire air basin has a disproportionately large low-income or minority population. To ensure that both localized and dispersed impacts on environmental justice populations would be considered, the low-income and minority components of various types of geographic areas were considered in this analysis. Specifically, the environmental justice analysis considered Bannock and Power Counties and the Fort Hall Reservation for which USCB data were available (see Table 5-2).

Executive Order 12898 also applies to tribes that are present or exercise treaty rights in the area. As described in Section 2.5.4 (*Tribal Treaty Rights and Tribal Resources*), the Shoshone-Bannock Tribes have tribal treaty rights in the Federal lands proposed for exchange. During the meetings held with the Shoshone-Bannock Tribes, tribe members expressed concern about potential adverse effects of the Blackrock Land Exchange on the lands, waters, and inhabitants of the Fort Hall Reservation. Tribal staff requested that a study be conducted to determine the impacts of glyphosates and phosphates from fertilizer manufacture at the Don Plant on water quality in the Portneuf River. Additional concerns were expressed about wildlife displacement, culturally significant areas, such as burial sites, and decreased land values resulting from the Blackrock Land Exchange (BLM 2019f).

Historic and current land use by these Native American groups is visible through the presence of culturally sensitive sites and other tribal resources including burial sites; spiritual sites; spring sites; camp sites; healing locations; battleground sites; trails; hunting, fishing, and gathering locations; scenery

and visual resources; and audio resources. The tribes also value landscape features in the Federal lands proposed for exchange including Howard Mountain and canyons surrounding the mountain that have long held significance for the Shoshone-Bannock Tribes (BLM 2019e).

For the purposes of this analysis, a community is considered an environmental justice community if the total number of individuals living below the poverty level or total minority population, as defined by the USCB, is 50 percent or more of the community or is "meaningfully greater" than the reference community (the state of Idaho or the SESA). To provide a conservative assessment, this analysis applied a standard of 10 percentage points higher than in the comparison area. By applying this analysis criteria to 2013–2017 American Community Survey 5-year estimates, the following were identified as potential environmental justice low-income and minority communities (Table 5-2):

- Fort Hall Reservation – American Indian minority population, total minority population
- Power County – Hispanic or Latino minority population, total minority population

No localities analyzed have a larger low-income population that meets the standard of being "meaningfully greater" than Idaho.

Table 5-2 provides details on the minority and low-income populations locally and in the state and county reference populations. This table is intended to demonstrate the data used to identify the two potential low-income and minority communities considered in the analysis.

Table 5-2. Number and Percentage of People in Minority or Low-Income Communities, 2017

Geography	Total Population	Black or African American Alone	American Indian or Alaskan Native Alone	Asian or Pacific Islander alone	Other and Two or More Races	Hispanic or Latino	Total Minority Population	Income Below Poverty Level
Idaho	1,716,943	15,052 (0.9%)	29,973 (1.7%)	30,059 (1.8%)	42,045 (2.4%)	215,392 (12.5%)	308,649 (18%)	15%
Bannock County	85,269	833 (1.0%)	3,130 (3.7%)	1,566 (1.8%)	2,033 (2.4%)	7,429 (8.7%)	13,602 (16%)	18%
Power County	**7,600**	**87 (1.1%)**	**279 (3.7%)**	**53 (0.7%)**	**170 (2.2%)**	**2,619 (34.5%)**	**2,986 (39.3%)**	**12%**
2-County Area	92,869	920 (1.0%)	3,409 (3.7%)	1,619 (1.7%)	2,203 (2.4%)	10,048 (10.8%)	16,588 (17.9%)	17%
Fort Hall Reservation	**5,952**	**10 (0.2%)**	**3,824 (64%)**	**61 (1.0%)**	**309 (5.2%)**	**710 (12%)**	**4,368 (73%)**	**22%**

Sources: USCB 2019g, 2017d, 2017e, 2017f.

Notes: **Bold text** indicates a potential low-income or minority community. Numbers for Idaho and Bannock and Power Counties were derived from Population Estimates: Table PEPSR6H, and for Fort Hall Reservation from the 2017 American Community Survey Estimates: Tables B02001, B03002, and B17020. American Community Survey Estimates were used to measure poverty. In accordance with the minority population groups identified in guidance from the Council on Environmental Quality (1997), the "Asian or Pacific Islander Alone" column represents the sum of the "Asian alone" and "Native Hawaiian and Other Pacific Islander alone" populations. People who identify as "Hispanic or Latino" may be of any race. The USCB threshold for poverty in 2017 was $12,752 for an individual under the age of 65, $11,756 for an individual over the age of 65, and $25,094 for a family of four (USCB 2018). The percentage in the "Income Below Poverty Level" column represents all below the poverty line.

5.2.1.1 The Shoshone-Bannock Tribes and the Fort Hall Indian Reservation

The Fort Hall Reservation is home to the Shoshone-Bannock Tribes. The tribes consist of "various mixed bands of Shoshone and Bannock Indians whose aboriginal homelands extended throughout the Great Basin and Northwest territories" (Tribal Economic Impacts 2015). The tribe's governing body is the Fort Hall Business Council, which oversees the growth of the tribes' businesses, protects the tribes' off-reservation treaty rights, and asserts the tribes' jurisdictional authority, among other duties. From 2005 to 2015, the tribes experienced a rapid growth spurred not only by gaming operations, but also by the expansion of the tribes' farming operations and tribal enterprises. The tribes' economic activity adds more than 4,400 jobs and $400 million annually to the eastern Idaho economy, but the tribes still experience a 17 percent unemployment rate and poverty and workforce issues (Tribal Economic Impacts 2015).

5.2.2 Environmental Risk Exposure

The U.S. Environmental Protection Agency developed an environmental justice mapping and screening tool called EJSCREEN. Based on national data, EJSCREEN combines 11 environmental and six demographic indicators to create 11 environmental justice indices in maps and reports. The raw data for 11 environmental indicators outlined by the U.S. Environmental Protection Agency are shown in Table 5-3. Presenting the raw data allows for a comparison of the SESA with both the state and national averages. By incorporating these environmental indicators, EJSCREEN is able to identify potential populations subjected disproportionately to adverse human health or environmental effects. The comparison to state and national averages indicates which counties and communities may be potentially more susceptible to environmental pollution. Please note that EJSCREEN is a preliminary tool not to be used to identify or label an area as an "environmental justice community." These indicators are varied in terms of the quality of them and the information they provide about potential impacts (U.S. Environmental Protection Agency 2018a).

Table 5-3 presents EJSCREEN results for the SESA and compares them to state and national averages. EJSCREEN does not produce an individual report the Fort Hall Reservation; Table 5-3 presents this population by census block group. Block group results are also displayed for Power County, which was identified as a potential low-income or minority community. The table presents the local area in comparison to the national percentile, which describes what percentage of the U.S. population has an equal or lower value, meaning less potential for exposure/risk/proximity to certain facilities, or a lower percentage minority population. Table 5-3 only presents the environmental indicators for which areas are largely below the national average, or greater than the 75th percentile.

The entire SESA is above the national average daily maximum 8-hour-average ozone of 42.5 parts per billion during the ozone season, in the 85th percentile or above. Ozone is associated with a variety of negative health outcomes, especially reduced lung function. The relatively high ozone concentration paired with the large elderly population in the analysis area, a population susceptible to ozone-induced effects, increases risks of adverse health effects from ozone.

The majority of the SESA is above the national average for lead paint in pre-1960s housing, with two block groups in Power County in the upper quartile. The lead paint indicator is not likely to be affected by the proposed land exchange and reasonably foreseeable actions.

Bannock County and two block groups of the Fort Hall Reservation are in the upper quartile for Superfund proximity. The city of Pocatello in Bannock County is home to three active Superfund sites (U.S. Environmental Protection Agency 2019a, 2019b, 2019c). Superfund sites are contaminated areas due to hazardous waste being dumped, left out in the open, or otherwise improperly managed from

manufacturing facilities, processing plants, landfills, and mining sites (U.S. Environmental Protection Agency 2018b).

Wastewater discharge environmental indicator scores for all areas were higher than the national average except for a single block group in the Fort Hall Reservation. Wastewater discharge scores reflect reported information from the toxics release inventory on the amount of toxic chemicals released, and the chemical's relative toxicity, potential human exposure, and transport through the environment. Power County is in the 80th percentile nationally (U.S. Environmental Protection Agency 2018a).

Table 5-3. Environmental Indicators in Analysis Area and Percentile of U.S.

Geography	Ozone	Lead Paint	Superfund Proximity	Wastewater Discharge
Bannock County	86	62	82	77
Power County	86	65	46	80
160779601001	**87**	**77**	**59**	**86**
160779602001	85	51	37	72
160779602002	85	55	29	76
160779602003	**85**	**79**	**36**	**77**
160779602004	85	71	31	81
160779602005	85	10	31	69
Fort Hall Reservation	--	--	--	--
160059400001	**86**	**52**	**78**	**82**
160059400002	86	57	62	40
160119400001	85	52	40	63
160119400002	85	47	51	65
160779601002	**87**	**41**	**77**	**79**

Source: U.S. Environmental Protection Agency 2018a.
Notes: Only U.S. percentiles are presented; **bold text** indicates a potential environmental justice community as they are in the upper quartile for at least three indicators. The block group 160779601002 within the Fort Hall Reservation is the only one that resides entirely within both Power County and the Fort Hall Reservation.

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Blackrock Land Exchange

Final Environmental Impact Statement

Appendix H

Water Resource Technical Report

BLACKROCK LAND EXCHANGE

WATER RESOURCE TECHNICAL REPORT

Simplot Don Plant

Pocatello, Idaho

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August 2019

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ACRONYMS AND ABBREVIATIONS

ac	acre
AFLB	American Falls Lake Beds
AOC	Administrative Order on Consent
BLM	Bureau of Land Management
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
cfs	cubic feet per second
COC	Contaminant of Concern
CSM	Conceptual Site Model
DAF	Dilution Attenuation Factor
EIS	Environmental Impact Statement
EMF	Eastern Michaud Flats
EPA	Environmental Protection Agency
FMC	FMC Corporation
FS	Feasibility Study
gpm	gallons per minute
gpm/acre	gallons per minute per acre
HDPE	high-density polyethylene
IDEQ	Idaho Department of Environmental Quality
IDWR	Idaho Department of Water Resources
in/year	inches per year
IRODA	Interim Record of Decision Amendment
lbs/day	pounds per day
MCL	Maximum Contaminant Level
mg/L	milligrams per liter
NPL	National Priorities List
OU	Operable Unit
PAP	Phosphoric Acid Plant
pCi/L	picocuries per liter
POTW	Publicly Owned Treatment Works
RBC	Risk-based Concentration
RI	Remedial Investigation
ROD	Record of Decision
Simplot	J.R. Simplot Company
TCZ	Target Capture Zone
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Load
USGS	United States Geological Survey
VCO/CA	Voluntary Consent Order/Compliance Agreement

1.0 INTRODUCTION

The J.R. Simplot Company (Simplot) operates the Don Plant, a phosphate manufacturing facility near Pocatello, Idaho (Figure 1-1). Simplot is pursuing a land exchange with the Bureau of Land Management (BLM) to acquire federal land adjacent to the facility for expansion of the existing phosphogypsum ("gypsum") stack and for construction of new cooling ponds. The project is called the "Blackrock Land Exchange", as the land offered by Simplot for exchange is in the Blackrock area approximately 9 miles southeast of Pocatello.

This report describes a quantitative assessment of the potential impacts to groundwater and surface water resources from ongoing operations at the Don Plant and from the Reasonably Foreseeable Development of the gypsum stack expansion and new cooling ponds on federal lands. This assessment will inform the cumulative impacts analysis in the Blackrock Land Exchange Environmental Impact Statement (EIS). The report is intended to assess potential impacts to groundwater quality (which discharges to surface water) from potential expansion (new construction) on the lands proposed for exchange. Groundwater from the expansion areas would migrate to areas where existing groundwater contamination exists from past releases, which is being addressed by CERCLA response actions with the goal to restore it over time at the Simplot OU. Therefore, the analysis considers the effects of the CERCLA response actions as the baseline condition for evaluation under NEPA.

The Don Plant is part of the Eastern Michaud Flats Superfund Site ("EMF Site"), which includes the adjacent FMC area. The EMF Site was listed to the National Priorities List (NPL) in 1990. A Remedial Investigation/Feasibility Study (RI/FS) was performed in accordance with the Administrative Order of Consent (AOC) for the EMF Site, issued by the U.S. Environmental Protection Agency (EPA) on May 30, 1991, and entered into by FMC Corporation (FMC) and Simplot. The U.S. Environmental Protection Agency (EPA) divided the Site into three operable units (OUs): the FMC OU includes the FMC facility and adjacent land owned by FMC; the Simplot OU includes the Don Plant and adjacent land owned by Simplot; and the Off-Plant OU encompasses the remainder of the EMF Site.

The RI was completed in 1996 (Bechtel 1996) and the FS was completed in 1998 (Simplot 1998, Simplot & FMC 1998, FMC 1998). EPA issued a Record of Decision (ROD; EPA 1998) selecting the Site remedy and Simplot subsequently entered into a Remedial Design/Remedial Action Consent Decree (CD; EPA 2002). The primary focus was the remedy for groundwater, which included extraction of groundwater downgradient of the gypsum stack and reuse of the extracted water in the Don Plant process. In 2008 Simplot entered into a Voluntary Consent Order/Compliance Agreement (VCO/CA) with the Idaho Department of Environmental Quality (IDEQ; IDEQ 2008) intended to fulfill Simplot's obligations for the Portneuf River Total Maximum Daily Load (TMDL). Site groundwater discharges to the Portneuf River and the VCO/CA set out remedy goals (timing and concentration) for phosphorus in the Portneuf River based on the TMDL process. Under the VCO/CA, Simplot submitted a Remedial Action Plan (Simplot 2017), which describes remedial actions to be implemented, including installing a synthetic liner on the existing gypsum stack to reduce seepage and loading of phosphorus to groundwater beneath the stack and implementation of a source control program in the Phosphoric Acid Plant (PAP) to reduce releases of phosphorus to groundwater. The VCO/CA also includes requirements for any new gypsum stack: VCO/CA Section 5(h) outlines requirements for "any new gypsum storage/stack built at Don Plant, including any gypsum stack built on any new land to be acquired for this purpose". In addition, Section 5(d) specifies that the VCO/CA required Remedial Action Plan may include description of plans for the completion of the Blackrock Land Exchange and the development of a new, lined gypsum storage facility.

EPA subsequently issued an Interim Record of Decision Amendment (IRODA; EPA 2010a) primarily to address issues associated with phosphorus in groundwater and surface water. The IRODA also required installation of a synthetic liner on the existing gypsum stack and a phosphorus source control plan for the PAP. Simplot entered into the First Amended CD (EPA 2010b) to implement the additional remedy components.

The remedy for groundwater/surface water consists of the following basic elements:

- Extraction of groundwater downgradient of the gypsum stack and PAP Area;
- Control of sources of phosphorus in the PAP Area;
- Installation of a high-density polyethylene (HDPE) liner on top of the existing gypsum stack with continued placement of gypsum on the liner; and
- Groundwater and surface water monitoring to assess the performance of the remedial actions.

These actions have been implemented and their effectiveness is being monitored. As a result of the process described above, there has been significant monitoring and assessment of environmental conditions at the Don Plant. These provide the basis for information and technical evaluations included herein.

The proposed gypsum stack expansion and cooling pond construction described in this report would not be in any way related to the CERCLA project but rather would be implemented under the VCO/CA. Simplot recently designed and constructed an expansion to the gypsum stack (“Phase 6”) and two decant ponds outside the CERCLA process and this situation is the same relative to new facility operations and CERCLA. Any contaminants that are potentially released from the proposed expansion area would migrate to areas where groundwater contamination exists from past releases from the gypsum stack. Also, all groundwater discharges to the Portneuf River. Therefore, the report evaluates water quality in key areas downgradient of the proposed features, including areas where contamination already exists (and that are being monitored under CERCLA).

Further, the baseline analysis provided in this document is not intended to provide an assessment of long-term compliance with the VCO/CA. Assessing Simplot’s compliance with the regulatory requirements identified in the 2008 VCO/CA and the 2010 IRODA is the responsibility of DEQ and EPA outside of the NEPA process. The VCO/CA and IRODA provide a basis for Simplot to systematically and adaptively work with DEQ and EPA toward achieving the objectives and goals of these legal agreements. Part of that technical and regulatory framework includes refinement of the Conceptual Site Model as new data becomes available to assess the effectiveness of response actions performed by Simplot and to address anticipated incremental loading from the expanded gypsum stack and cooling ponds and modeling their cumulative impacts within the context of achieving regulatory targets. Assessment of compliance with the VCO/CA is provided in an annual report on the groundwater/surface water remedy (e.g., Formation 2019a).

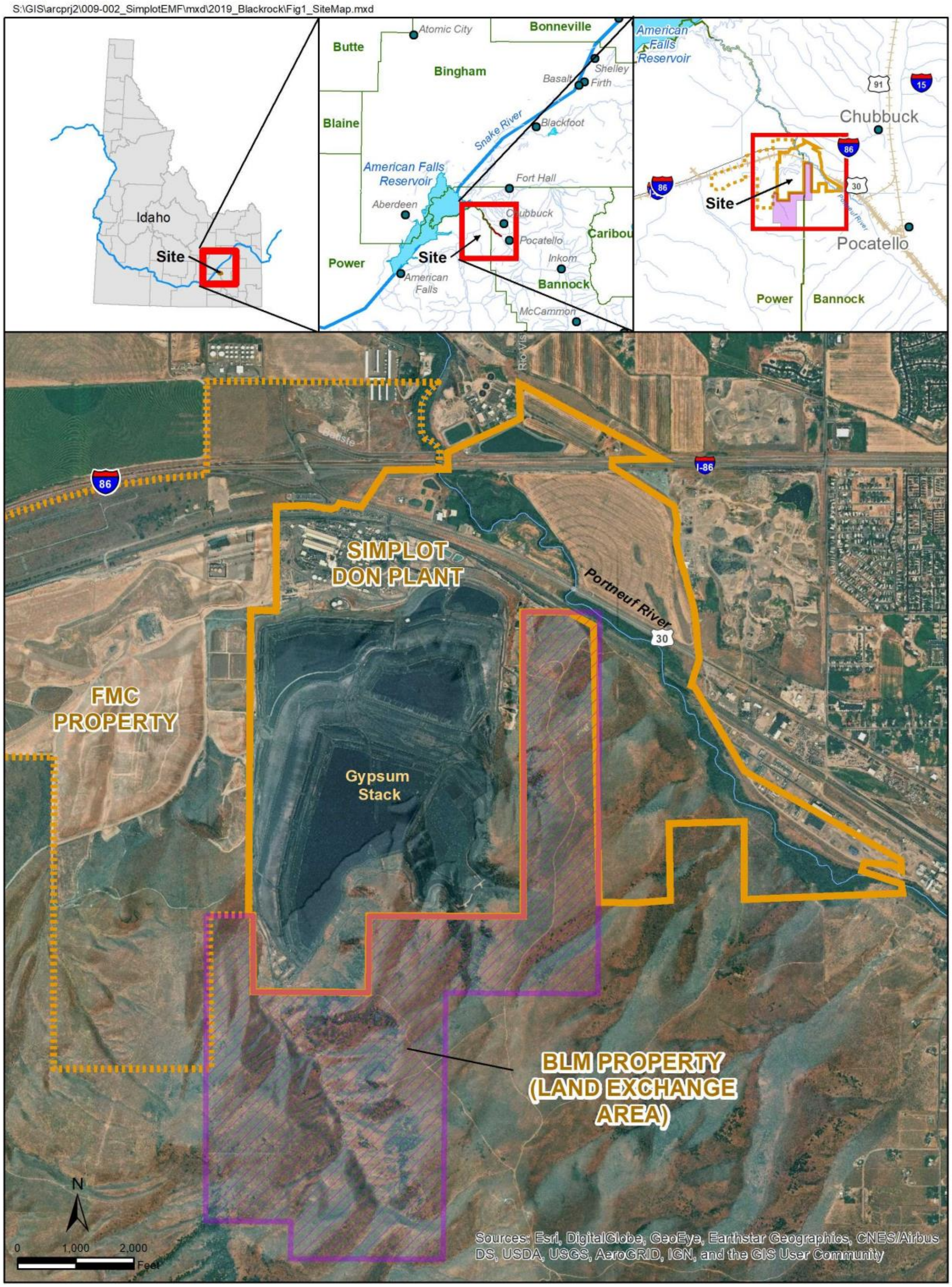


Figure 1-1. Site Location Map

2.0 PHYSICAL CHARACTERISTICS

The conceptual site model (CSM) for groundwater at the EMF Site is described in detail in the *Groundwater Remedial Design Report* (Formation 2010a). This section provides an overview of the groundwater CSM to summarize the key elements. The CSM description is divided into the following topics:

- Site physiographic setting
- Site-specific geology and hydrogeology
- Surface water – groundwater interaction
- Nature and extent of site-derived constituents
- Fate and transport of site-derived constituents

2.1 Physiographic Setting

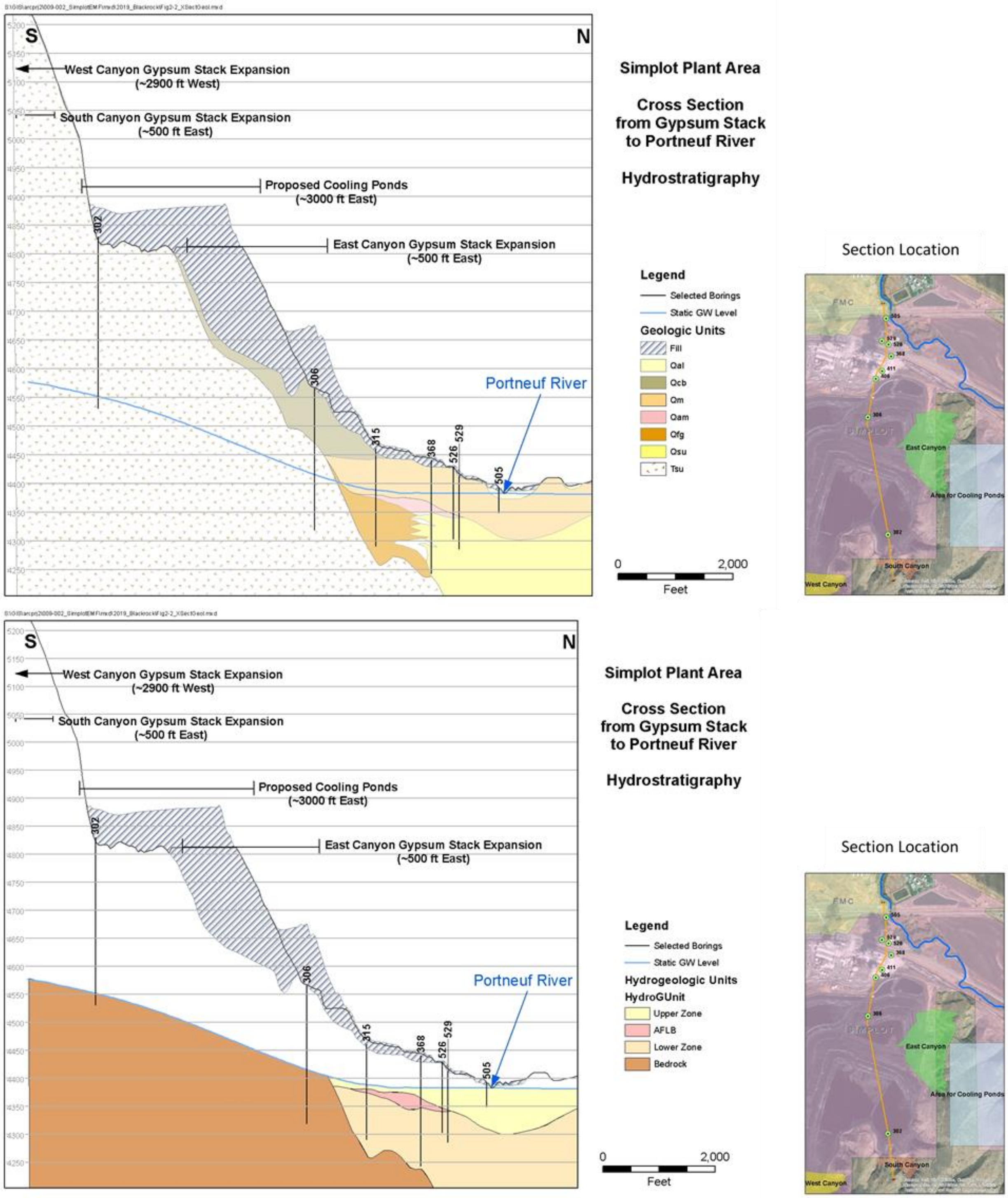
The EMF Site is located at the base of the northern slope of the Bannock Range and along the western flank of the Portneuf Valley, where the range and river valley merge with the Snake River Plain in the area known as Michaud Flats (Figure 2-1). The southern portion of the Simplot Plant Area, which includes the gypsum stacks, is located on the northern flank of the Bannock Range. The northern portion of the Simplot OU, which includes the holding ponds north of Highway 30, is located in the eastern portion of Michaud Flats adjacent to the Portneuf River. The central portion of the Simplot Plant Area, where most of the plant facilities are located, is at the base of the Bannock Range where subsurface deposits represent a combination of materials derived from erosion of the mountain range and materials deposited by the Portneuf River.

2.2 Geology and Hydrogeology

The southern portion of the EMF Site is located on the northern flank of the Bannock Range. Bedrock in this area consists of the Tertiary Starlight Formation, the upper member (Tsu) of which consists of a porphyritic trachyandesite flow as shown on Figure 2-2. This unit forms the prominent cliffs that rise above the gypsum stack to the south. The bedrock is mantled by varying thicknesses of alluvial fan gravel (Qfg) and loess/colluvium (Qcb). The northern portion of the EMF Site is located in the eastern portion of Michaud Flats. The geology in this area consists of (from the surface downward) the Michaud Gravel (Qm), the American Falls Lake Beds (Qam), the Sunbeam Formation (Qsu), and the Big Hole Basalt (Qbh). The Sunbeam Formation (Qsu) consists of mostly coarse gravel deposits associated with the Portneuf River. Lacustrine sediments were named the American Falls Lake Beds (AFLB) by Carr and Trimble (1963) and are mostly clay with minor silt, sand, and localized gravel. The overlying Michaud Gravel consists of mostly quartzite and other quartz-rich metamorphic lithologies with minor basalt and was deposited approximately during the late Pleistocene Bonneville Flood. The flood event removed the AFLB clay north of present-day Highway 30. Sediment can be exceptionally coarse in the flood channels; quartzite and basalt boulders up to 8 feet (2.5 meters) in diameter occur in downtown Pocatello (Trimble 1976).

Source: Formation 2019a

Figure 2-1. Physiographic setting of the EMF Site



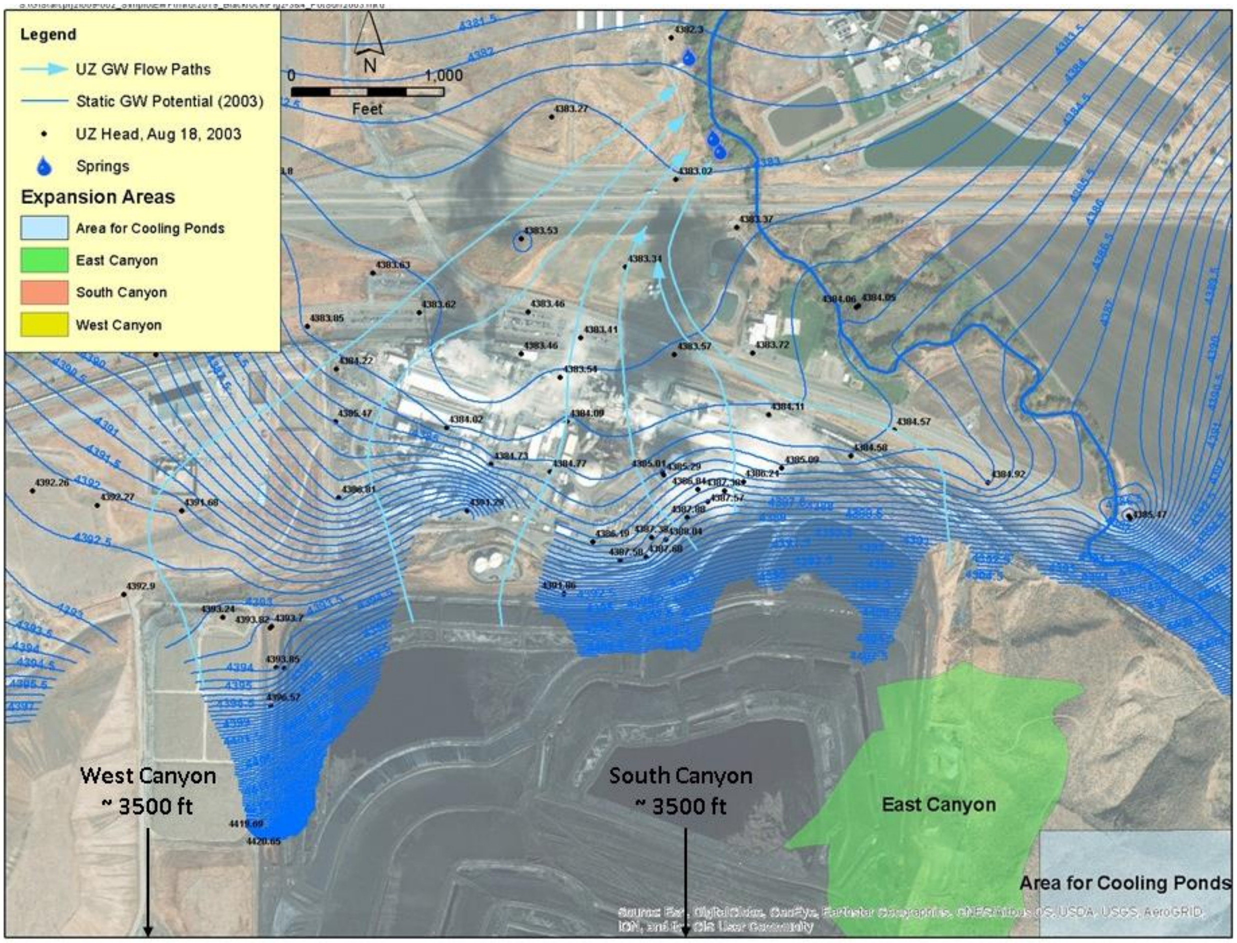
Source: Formation 2010a

Figure 2-2. North-South cross section showing geology and hydrogeology

Based on hydrogeologic properties, geologic strata in the area can be divided into four hydrostratigraphic units: the Tertiary volcanics (also referred to as bedrock), the Upper Zone which consists of the Michaud Gravel that overlies the AFLB, the AFLB clay itself, which is a local confining unit, and the Lower Zone, which consists of the materials below the AFLB.

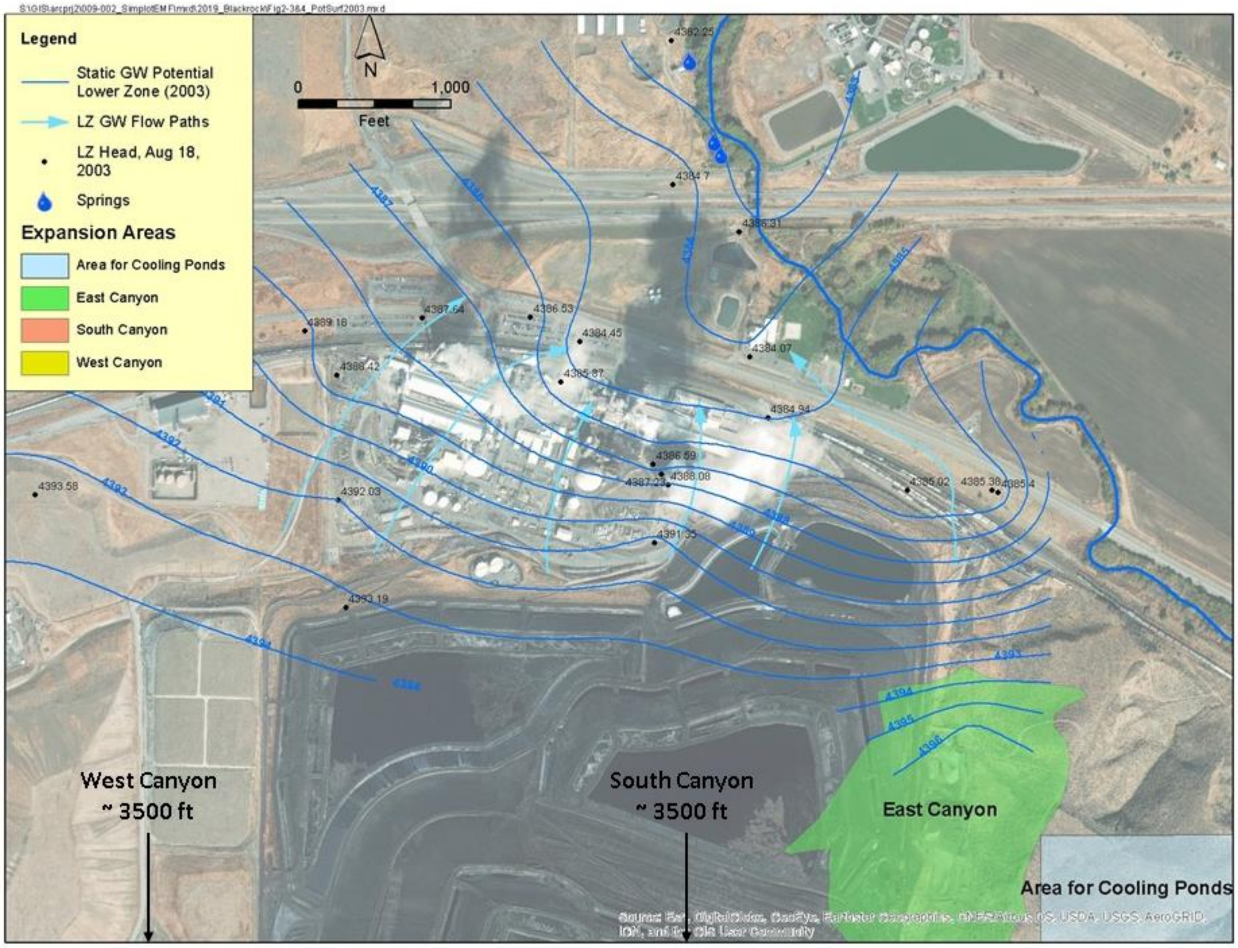
Groundwater levels were measured in all available monitoring wells in the FMC and Simplot Plant Areas in August 2003, prior to the installation of the test extraction system. Potentiometric maps for the Simplot OU are shown in Figure 2-3 and Figure 2-4. The Upper Zone potentiometric surface map includes all data indicating water table location, including wells completed in the Starlight Formation in the Bannock Range. The Lower Zone potentiometric surface map includes wells completed below the AFLB. This potentiometric surface map is the best available representation of pre-extraction system hydraulic conditions.

Hydraulic gradients in the Upper Zone decrease from the southern limit of the zone to the north. This trend correlates with an increase in hydraulic conductivity. Groundwater flow paths (lines perpendicular to groundwater flow) converge at the Portneuf River in a narrow reach where the Batiste Springs are located (labeled as springs on Figure 2-3 and Figure 2-4).



Source: Formation 2010a

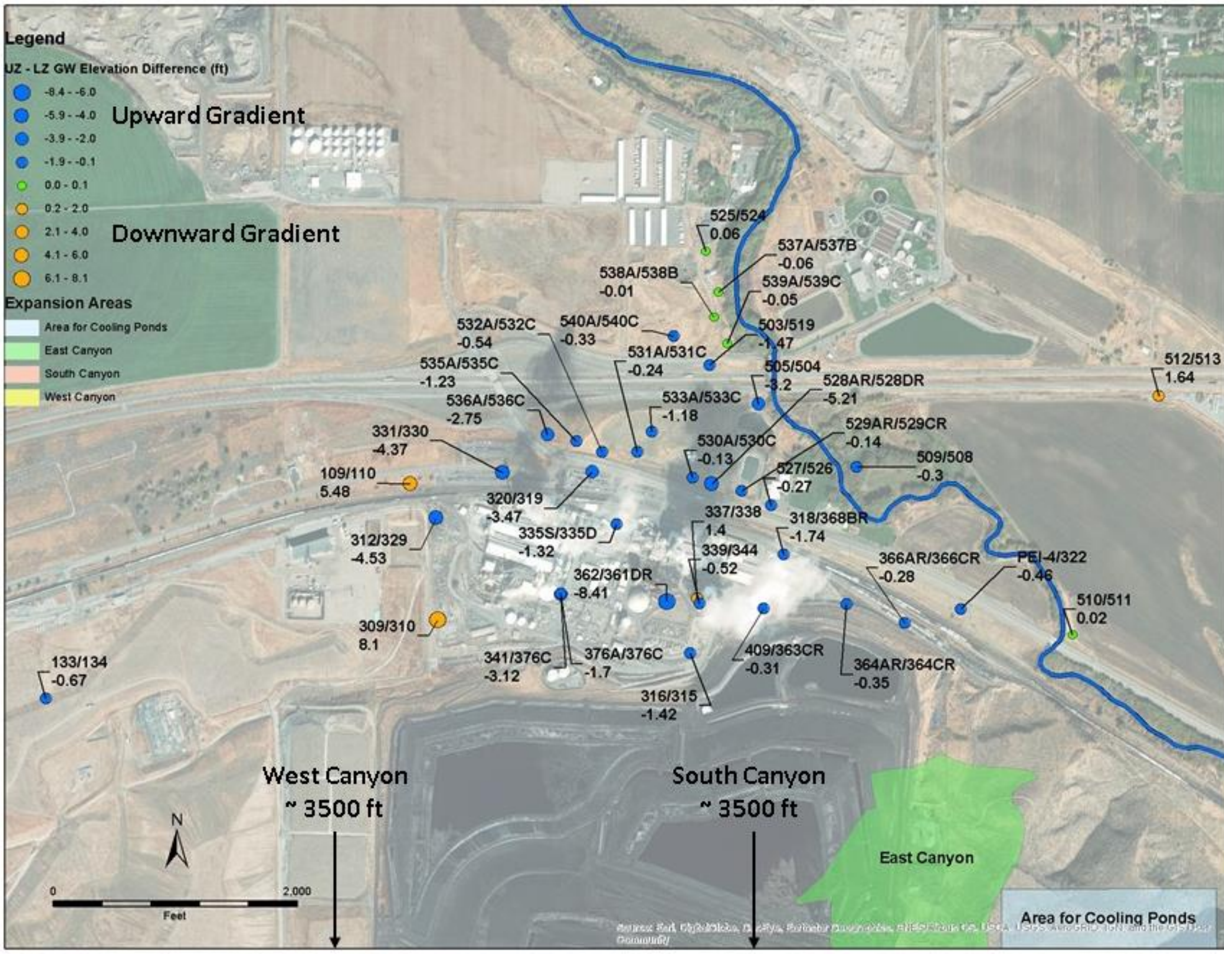
Figure 2-3. Interpreted potentiometric surface for the Upper Zone, August 2003



Source: Formation 2010a

Figure 2-4. Interpreted potentiometric surface for the Lower Zone, August 2003

Hydraulic gradients in the Lower Zone follow a pattern similar to those in the Upper Zone south of Highway 30. At the location of Highway 30, the AFLB clay pinches out and the Upper and Lower Zones merge. There is a large upward hydraulic gradient within the Lower Zone at this location. Measurements of water levels at nested wells indicate that the upward hydraulic groundwater gradient in this area is from 10 to 100 times greater than the horizontal flow gradient (Figure 2-5). The groundwater flow paths shown in Figure 2-3 and Figure 2-4 only represent lateral groundwater flow directions.

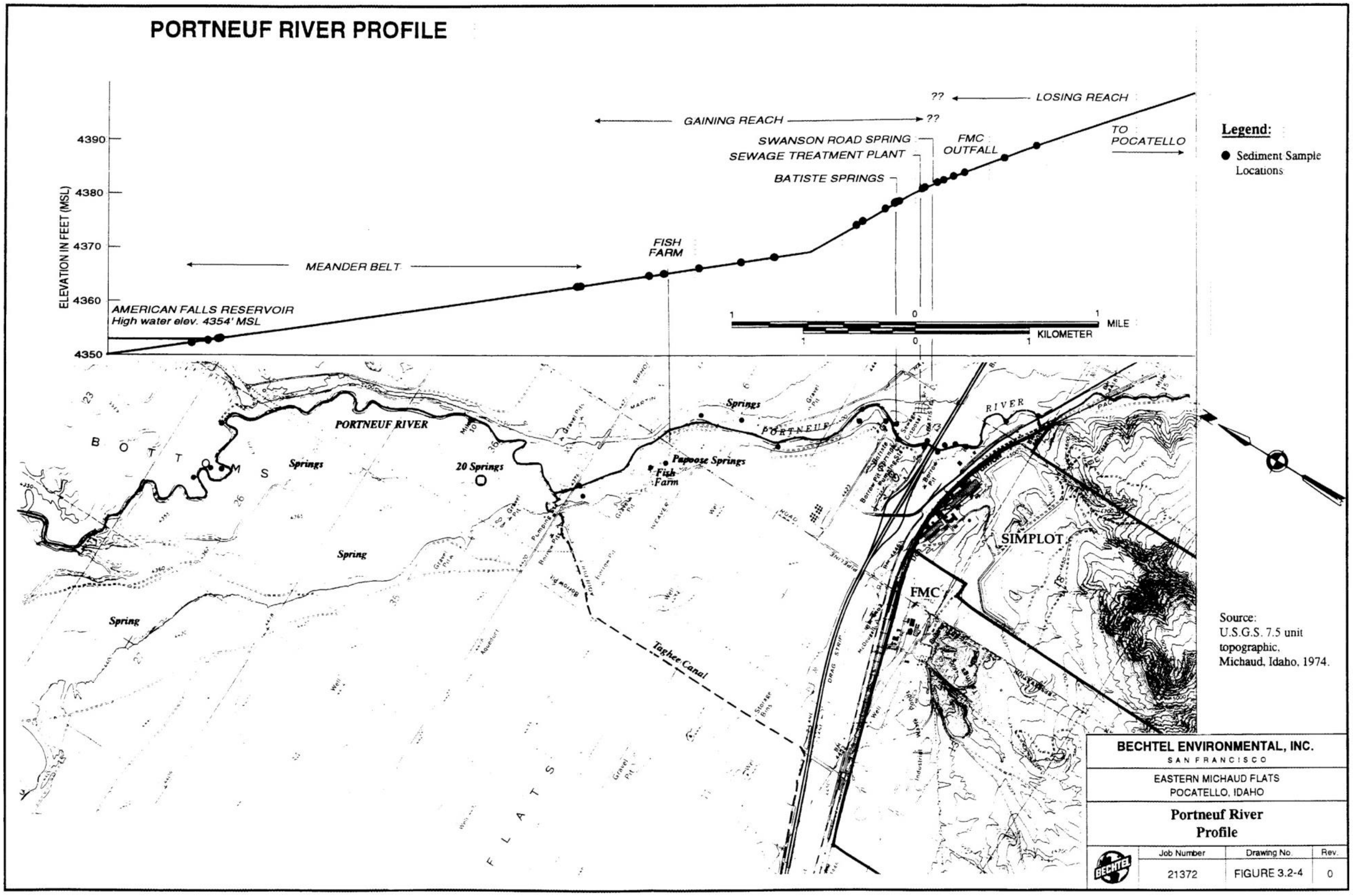


Source: Formation 2010a

Figure 2-5. Vertical groundwater flow gradients measured at nested wells

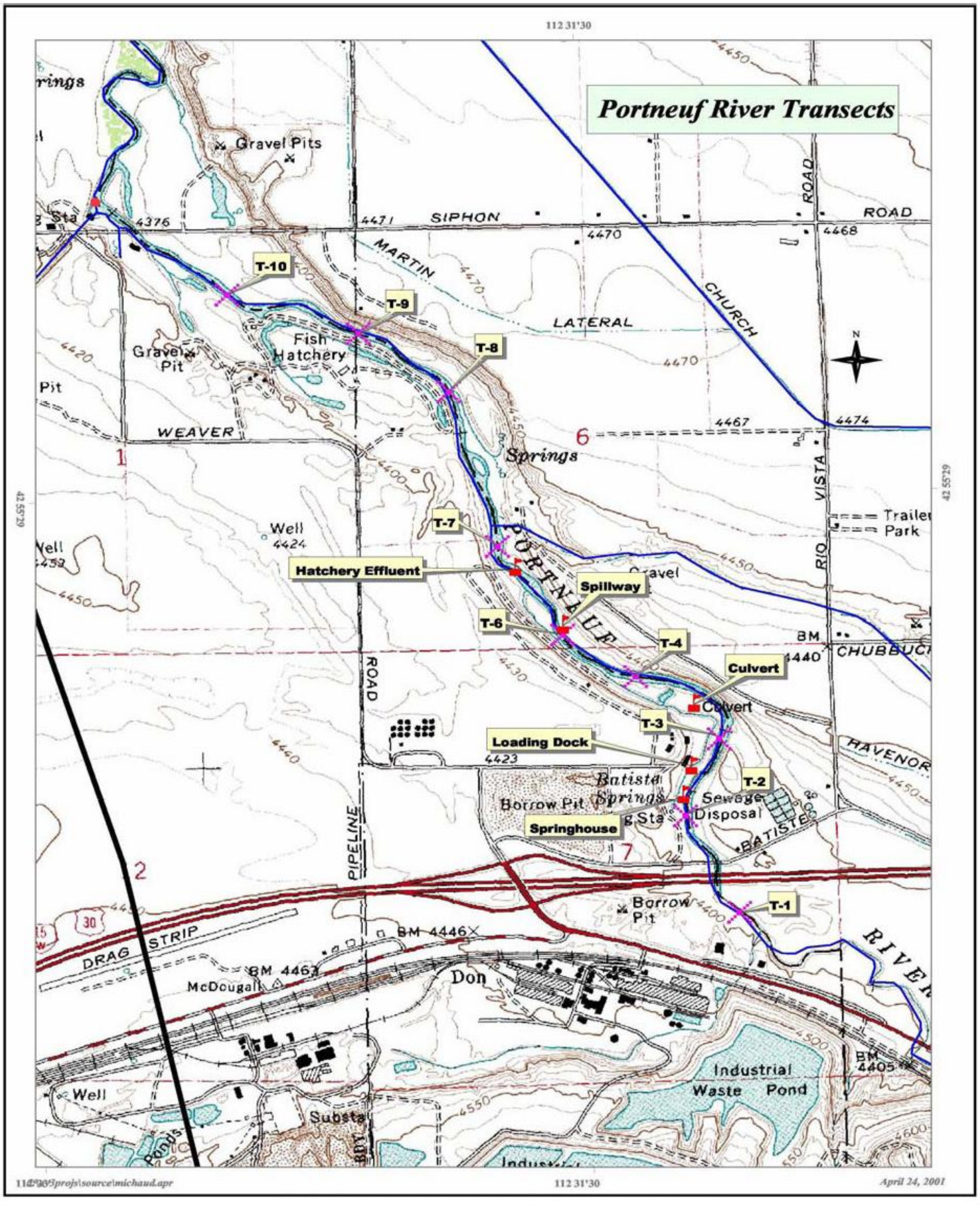
2.3 Surface Water – Groundwater Interaction

The Portneuf River provides a hydraulic boundary to groundwater flow in the Simplot OU and a regional discharge location for groundwater in the area, including groundwater affected by Simplot operations. The profile of the Portneuf River is shown in Figure 2-6. The river transitions from a losing stream to a gaining stream in the vicinity of the I-86 bridge. IDEQ performed a study of water quality impacts to the Portneuf River from 1999 to 2002 and published the results in 2004 (IDEQ 2004). Transect survey locations for the IDEQ study are shown in Figure 2-7. As shown in Figure 2-8 the river gains a significant flow of water from transect T-1 to T-4, and the orthophosphate load to the river peaks at station T-3. This information indicates that discharge of the plume of affected groundwater from the Simplot and FMC OUs to the Portneuf River is likely to be concentrated in the river between stations T-1 and T-3.



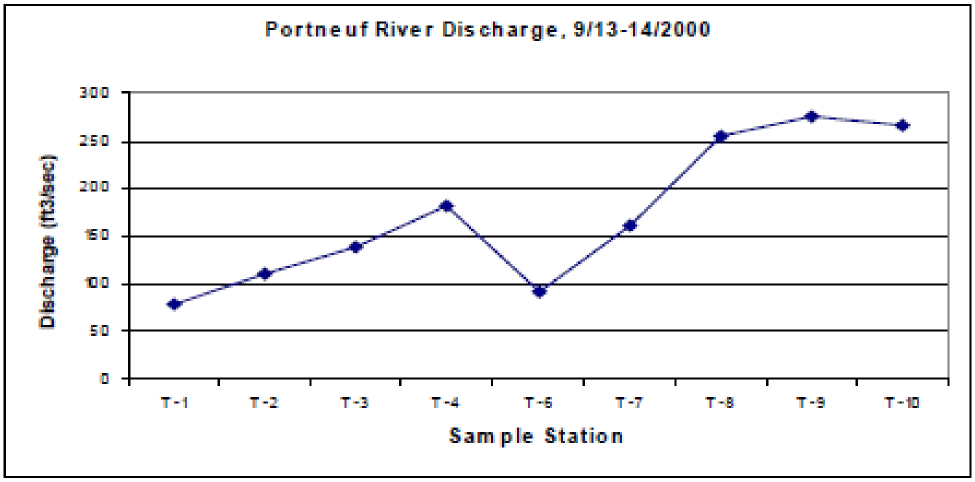
Source: Bechtel 1996

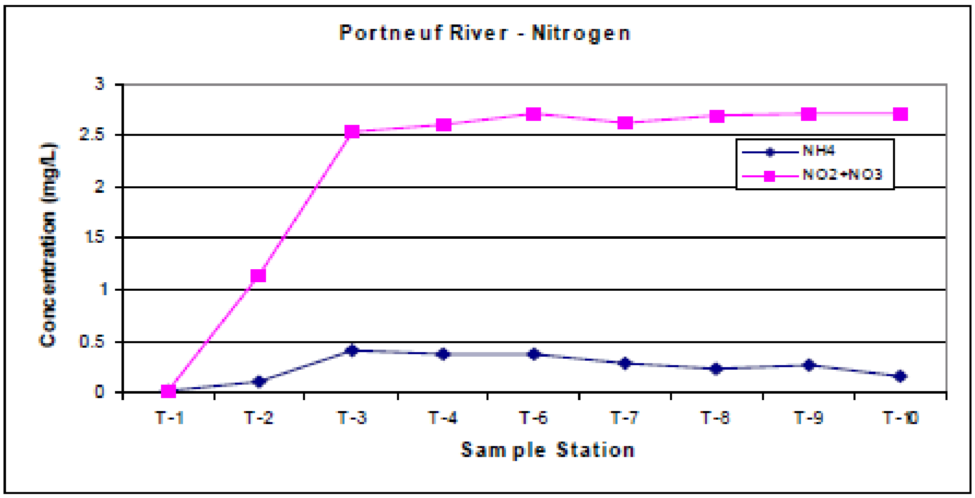
Figure 2-6. The Portneuf River transitions from a losing to a gaining stream near the I-86 bridge

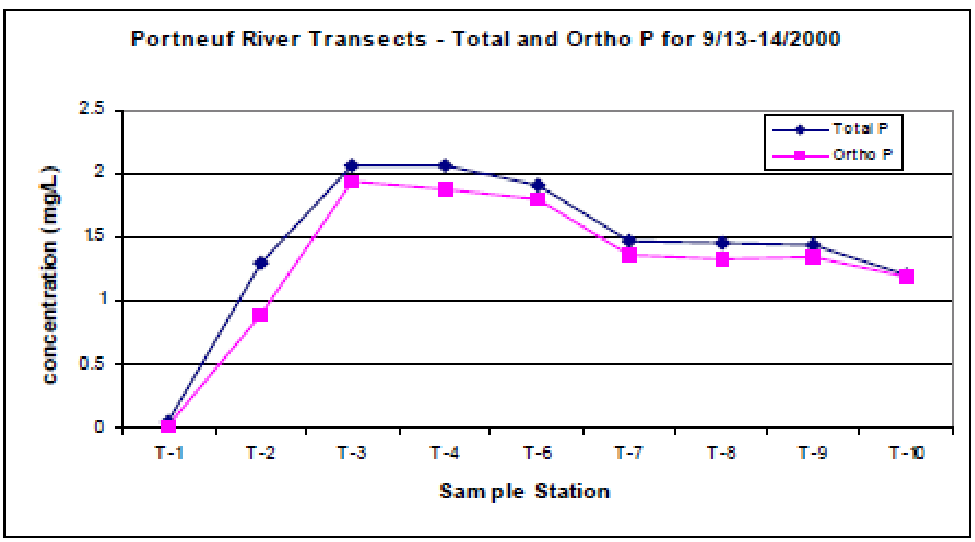


Source: IDEQ 2004

Figure 2-7. From the Idaho DEQ study on the Portneuf River showing survey transect locations





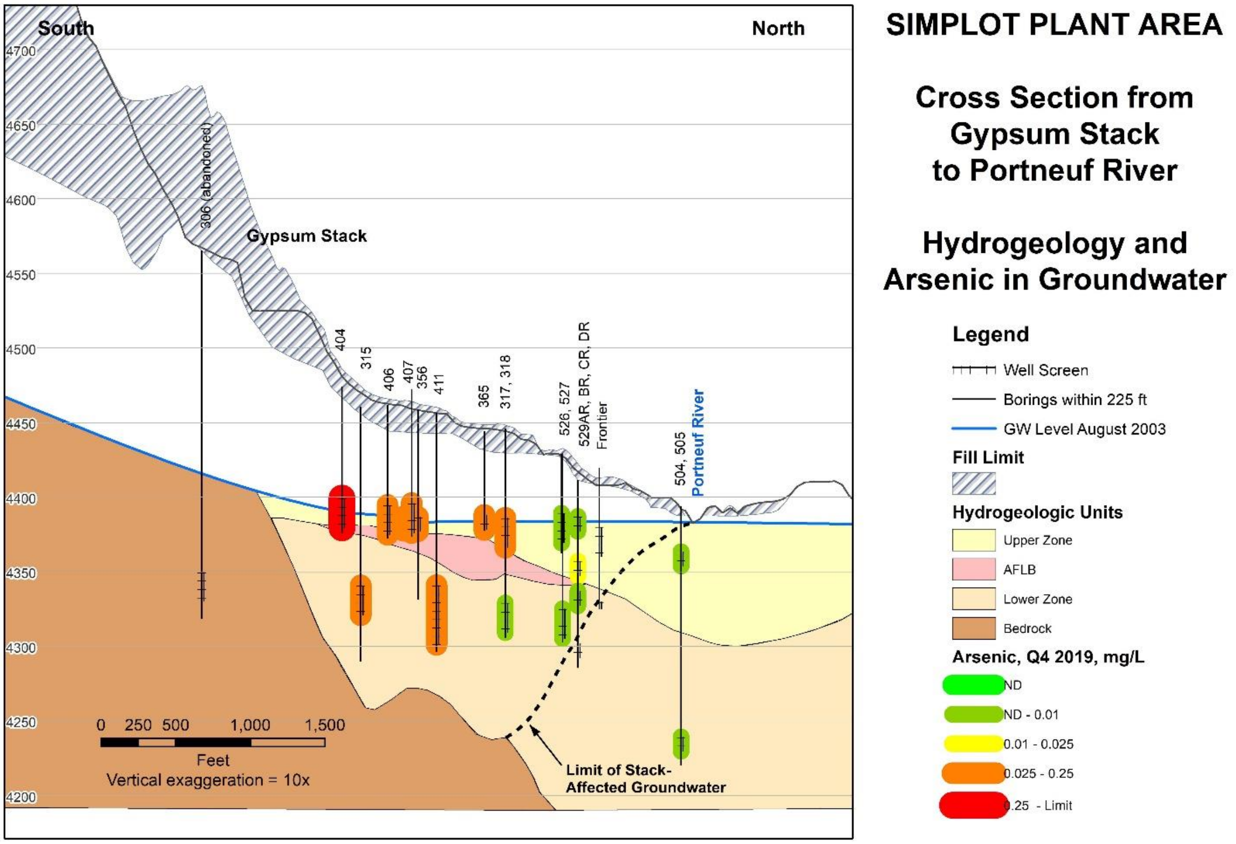


Source: IDEQ 2004, Figure 8

Figure 2-8. IDEQ data from September 2000

2.4 Nature and Extent of Site-Derived Constituents in Groundwater

Operations at the FMC and Simplot facilities have affected groundwater quality at the location of operations. In general, groundwater flowing north from the Bannock Range mixes with groundwater affected by Site activities, resulting in increased constituent concentrations. As the affected groundwater travels away from the Bannock Range, it moves from the volcanic bedrock of the mountains through clay-rich alluvial fan deposits and then into coarse-grained alluvial deposits. As groundwater migrates north of Highway 30, it enters the region where the coarse-grained alluvial materials of the Upper Zone (Michaud Gravel [Qm]) and underlying Lower Zone (Sunbeam Formation [Qsu]) merge into a continuous hydraulic unit. In the plant areas, the two formations are separated by the AFLB. As shown in Figure 2-9, the lower limit of affected groundwater in the Simplot OU (as illustrated by arsenic concentrations) decreases in depth from south to north due to the upward hydraulic gradient and the termination of the AFLB clay unit (Formation 2010a). As constituents migrate north and northeast, concentrations are diluted due to mixing with unaffected groundwater in a zone of high hydraulic conductivity. The source of unaffected groundwater is regional flow from the prolific basalt and gravel aquifers underlying Michaud Flats to the west and down valley underflow from the Pocatello Valley aquifer to the east. Ultimately the affected groundwater discharges to the Portneuf River through springs and channel bank baseflow. Numerous investigations support the hypothesis that all affected groundwater discharges to the river in a short reach north of the I-86 bridge (Formation 2010a).



Source: Formation 2010a

Figure 2-9. Cross section of wells showing distribution of arsenic in groundwater (see Figure 2-2 for section location)

2.5 Fate and Transport of Site-Derived Constituents in Groundwater at the Simplot Don Plant

The groundwater CSM for transport of contaminants of concern (COCs) from Simplot sources through groundwater to the Portneuf River is best illustrated using a mass loading model that considers sources to groundwater, groundwater extraction, attenuation, and discharge to the Portneuf River. The model of the groundwater system is based on investigations, historical groundwater and surface water quality data, and operational information. *Technical Report No. 1* (Simplot 2009) and the *Groundwater Remedial Design Report* (Formation 2010a) provide specific references regarding the basis for the calculations. The mass balance relationship was first established between phosphorus and sulfate loading from source areas and discharge to the Portneuf River based on available data. An overview of the mass flux model is presented in Figure 2-10.

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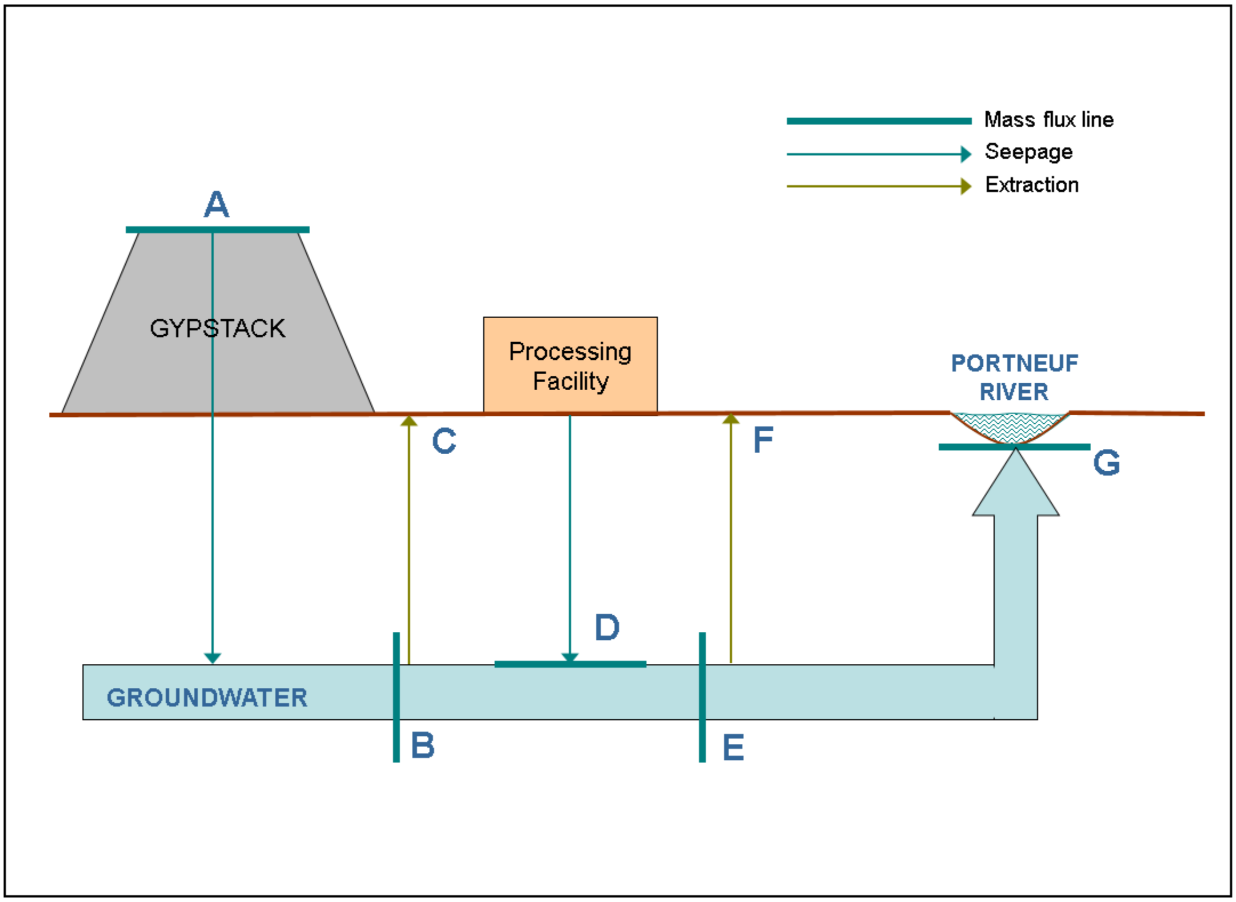


Source: Simplot 2009

Figure 2-10. Schematic diagram of COC loading and transport to Portneuf River

The mass flux model considered all inputs to and outputs from the groundwater system from the farthest upgradient location in the Simplot OU to the Portneuf River at Siphon Road. The locations annotated as A to G in Figure 2-10 represent locations where data exist to quantify mass flux of phosphorus in the system. These locations are as follows:

- A – COC loading to groundwater occurs due to infiltration of gypsum stack slurry liquid that migrates through the stack and the underlying vadose zone and combines with background groundwater flow. A portion of the load is attenuated in the unsaturated and saturated zones as the liquid migrates through the subsurface.
- B – As part of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) groundwater extraction design, substantial data have been gathered in the target extraction area downgradient of the gypsum stack and in the vicinity of the PAP Area. These data allow for calculation of groundwater flow rates and average COC concentrations in specific flow areas to develop an estimate of the total mass flux of in groundwater. These are calculated and reported each quarter.
- C – Groundwater extraction in the facility area from production and CERCLA extraction wells completed upgradient of most of the processing facility. Production well SWP-4 removed some load historically but is no longer in use. Production wells SWP-5 and SWP-7 do not remove any affected groundwater.

- D – COC loading to the groundwater from the processing facility occurs from releases of process liquids in production areas and releases from the storm water management system which can include dissolved solid product and/or liquids that are routed to the land application system.
- E – This location represents the total mass flux of COCs in groundwater in the target extraction area.
- F – This represents COC mass flux removed by extraction wells downgradient of the gypsum stack and the processing facility.
- G – This location is the river.

3.0 SUPERFUND PROJECT SUMMARY AND KEY FINDINGS

This section provides a summary of previous/ongoing efforts associated with the groundwater/surface water remedies resulting from the 1998 ROD, 2010 IRODA, and VCO/CA. It includes a summary description of the remedies and the results of groundwater and surface water monitoring that demonstrate the effectiveness of these remedies. This represents the past and present conditions in the cumulative impacts analysis.

3.1 RI/FS and 1998 ROD

The RI characterized a wide range of contaminants in groundwater and surface water (see Tables 3-1 and 3-2 in Formation 2019a). The evaluation included development of "representative" contaminant levels in groundwater (i.e., concentrations that would be present in the absence of releases from FMC or Simplot operations). It provided a description of the nature and extent of contamination in groundwater and surface water (as well as other environmental media), the fate and transport of contaminants from Simplot and FMC sources in environmental media, and provided data for use in the Baseline Human Health Risk Assessment (E&E 1995) and the Baseline Ecological Risk Assessment (E&E 1993).

The RI key findings for groundwater and surface water were:

- Contaminants have been released to ground water throughout the FMC and Simplot Plant areas. Contaminants that have been measured in the groundwater at levels above the Safe Drinking Water Act Maximum Contaminant Levels (MCLs) include the following: antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, mercury, nickel, nitrate, selenium, thallium, gross alpha, and gross beta. These concentrations decline with increasing distance from the Plants and meet MCLs in groundwater discharging to the Portneuf River (note: the arsenic MCL at that time was 0.05 milligrams per liter [mg/L]; it was changed to 0.01 mg/L in 2006).
- The predominant mechanisms controlling contaminant concentrations in groundwater are attenuation in the vadose zone and advective mixing, where the EMF Site-influenced shallow aquifer flow merges with the large volume of groundwater flowing through the Michaud Flats and Portneuf River ground water systems. In most areas groundwater movement is upward from the deeper aquifer to the shallow aquifer, thereby limiting the downward migration of contaminants to the deeper aquifer.
- Affected groundwater from the Simplot and FMC Plants discharges to the Portneuf River. However, there does not appear to be any measurable effect on surface water quality downstream of the discharge attributable to the Plants other than small increases in some major ion concentrations.

The results of these assessments were evaluated in the FS (Simplot 1996 and 1998) to develop contaminant-specific remedial action objectives (including a consideration of exposure pathways of concern and applicable or relevant and appropriate requirements) and remedial alternatives. At the FS stage, the Site was split into three separate areas: FMC, Simplot and Offsite. The remedial alternatives were evaluated against the seven CERCLA criteria in a detailed and comparative analysis to identify remedial actions that are predicted to have the best performance.

Based on the FS, EPA selected the remedy as documented in the ROD (EPA 1998), which contained the following for groundwater.

- Implement a groundwater extraction system to contain and reduce contaminants associated with the gypsum stack.

- Monitor groundwater and implement legally enforceable controls that will run with the land to prevent use of contaminated ground water for drinking purposes under current and future ownership.
- Restore groundwater that has been impacted by site sources to meet all RBCs and MCLs for the COCs. The goal of the monitoring is to assess progress over time toward reaching this long-term objective.

No remedial actions were deemed necessary for surface water.

3.2 TMDL, 2008 VCO/CA and 2010 IRODA

A water body assessment and TMDL was prepared by IDEQ in 1999 (IDEQ 1999). The TMDL was prepared for fecal coliform, oil and grease, suspended sediment, total inorganic nitrogen, and total phosphorus from nonpoint and point sources. The EPA approved the Portneuf River TMDL in 2001 (EPA 2001).

The *TMDL Implementation Plan* (IDEQ 2003) required Simplot to implement the remedy from the 1998 ROD. From 1999 to 2001 IDEQ performed a study to evaluate the phosphorus and nitrogen loading from groundwater discharging from the EMF Site. They reported that the groundwater discharge results in 35 to 55 percent and possibly as much as 80 percent of the nutrient load to the river. The groundwater enters the river in a relatively small stretch starting at the springs at Batiste Road.

Simplot and IDEQ subsequently signed a VCO/CA (IDEQ 2008) in which Simplot agreed to implement remedial actions to reduce its contribution of phosphorus to groundwater and ultimately the Portneuf River from an annual median concentration of 1.25 mg/L to 0.07 mg/L by the end of 2021 (measured at the Siphon Road bridge). The VCO/CA also includes requirements for any new gypsum stack: VCO/CA Section 5(h) outlines requirements for "any new gypsum storage/stack built at Don Plant, including any gypsum stack built on any new land to be acquired for this purpose". In addition, Section 5(d) specifies that the VCO/CA required Remedial Action Plan may include description of plans for the completion of the Blackrock Land Exchange and the development of a new, lined gypsum storage facility.

Under the VCO/CA, Simplot submitted a *Remedial Action Plan* (Simplot 2017), which describes remedial actions to be implemented, including installing a synthetic liner on the existing gypsum stack to reduce seepage and loading of phosphorus to groundwater beneath the stack and implementation of a source control program in the PAP to reduce releases of phosphorus to groundwater.

EPA subsequently issued an IRODA (EPA 2010a) primarily to address issues associated with phosphorus in groundwater which then discharges to surface water. The IRODA also required installation of a synthetic liner on the existing gypsum stack and a phosphorus source control plan for the PAP. Simplot entered into the First Amended CD (EPA 2010b) to implement the additional remedy components.

3.3 Remedial Actions

As discussed above the remedial actions set out in the ROD, IRODA and VCO/CA documents for groundwater and surface water are:

- Extraction of groundwater downgradient of the gypsum stack and PAP Area with reuse of the water in the Don Plant process;
- Control of sources of phosphorus in the PAP Area;
- Installation of an HDPE liner on top of the existing gypsum stack with continued placement of gypsum on the liner; and

- Groundwater and surface water monitoring to assess the performance of the remedial actions against the long-term objective to restore groundwater quality and short-term performance in meeting RBCs and MCLs in groundwater in the Compliance Area and to demonstrate the effectiveness of source controls.

These are discussed in the following subsections.

3.3.1 Groundwater Extraction

The groundwater system has been implemented in phases. The list of extraction wells, their start-up date and current status is shown in Table 3-1. Their locations are shown in Figure 3-1.

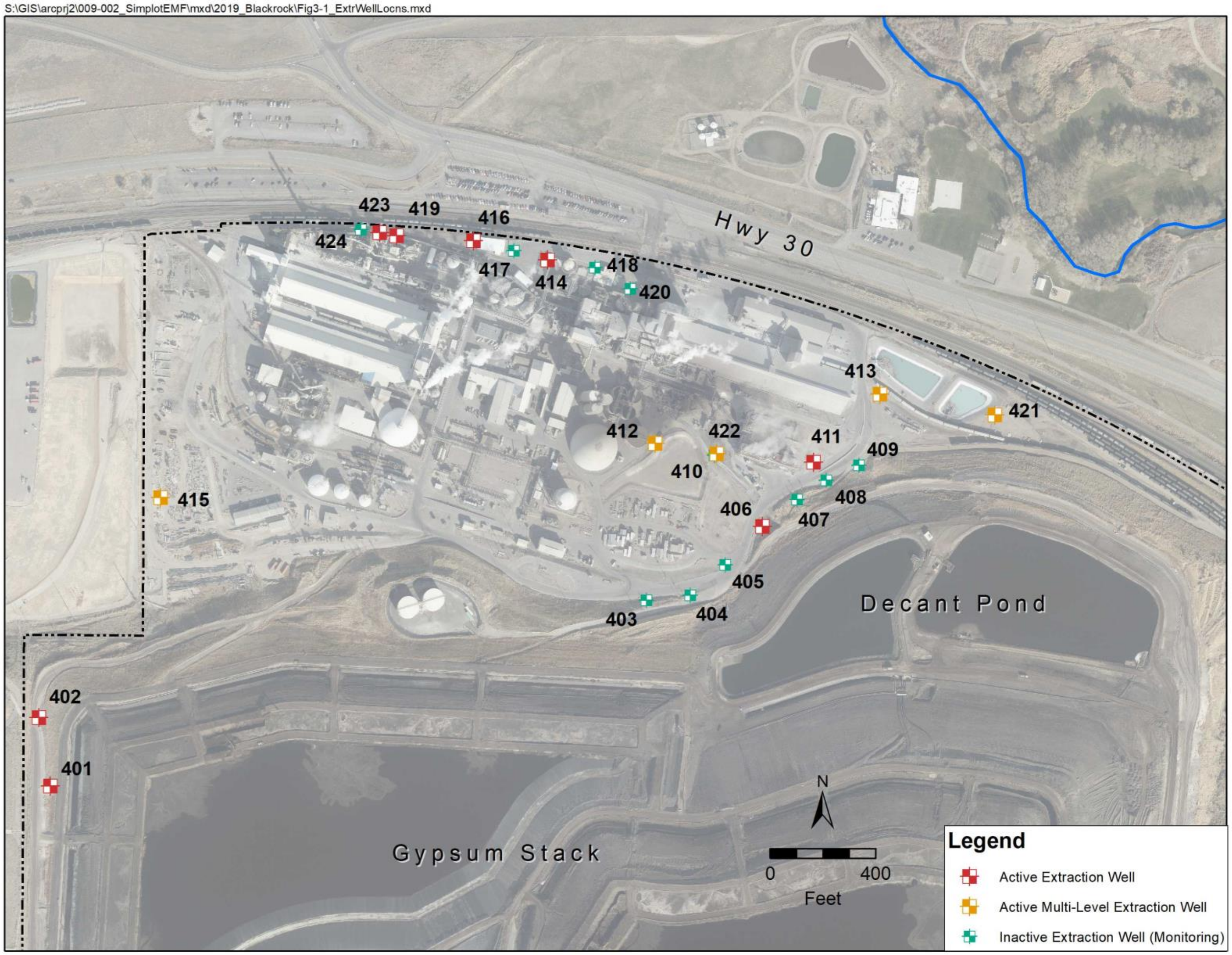
The performance of the extraction system has varied over time. The performance at an individual well can decrease over time as precipitates form on the screen and pump. Extracted water is reused in the Don Plant process; however, due to relatively high total dissolved solids (TDS) concentrations, it can only be used in specific locations and flows where the high TDS will not affect the process. The availability of locations for water use has also varied over time. In particular, as the gypsum stack has been lined and more water is returned from the stack to the facility, process changes have been made to accommodate more water in the process.

Table 3-1. Extraction System Well Summary

Extraction Well	Date Online[1]	Date Offline	Current Status
401	8/29/2005		active
402	8/29/2005		active
403	--		monitoring
404	8/29/2005	10/17/2013	monitoring
405	8/29/2005	7/13/2009	monitoring
406	8/29/2005		active
407	8/29/2005	5/1/2013	monitoring
408	8/29/2005	3/26/2009	monitoring
409	8/29/2005	3/12/2012	monitoring
410	8/29/2005	8/2/2011	monitoring
411	8/29/2005		active
412	1/26/2008		active
413	2/1/2008		active
414	12/21/2007		active
415	1/29/2008		active
416	4/29/2010		active
417	--		monitoring
418	--		monitoring
419	5/2/2010		active

[1] *Well 403 has never operated as an extraction well due to lack of water. Wells 417, 418, 420, and 424 were installed as potential extraction wells but have only been needed for monitoring since installation.*

Extraction Well	Date Online[1]	Date Offline	Current Status
420	--		monitoring
421	8/19/2011		active
422	8/19/2011		active
423	4/16/2015		active
424	--		monitoring



Source: Formation 2019a

Figure 3-1. Extraction Well Locations

The estimated performance of the extraction system in removing phosphorus and arsenic load from the groundwater is shown in Table 3-2. The percent of arsenic and phosphorus load in groundwater removed by the extraction system has varied over time due to a variety of factors, including the ability of the facility to use a large volume of water during critical times during the stack lining process (this was a factor in 2017, before the last lined stack compartment was operational), operation and maintenance activities to address gradual degradation of well performance in some wells due to formation of precipitates on the screens and pumps, and other well issues that can lead to significant downtime. As shown in Table 3-2, constituent loads in groundwater have decreased significantly over time, demonstrating environmental progress from implementing the source control remedies.

Table 3-2. Extraction System Mass Removed Summary

Year	Constituent Loads in Target Capture Zone Groundwater		Constituent Load Removed		% Load Removed	
	Arsenic	*Phosphorus*	*Arsenic*	*Phosphorus*	*Arsenic*	*Phosphorus*
	(lbs/day)	*(lbs/day)*	*(lbs/day)*	*(lbs/day)*	*(lbs/day)*	*(lbs/day)*
2009	4.05	4,387	2.25	1,873	55.6%	42.7%
2010	4.02	3,850	2.40	2,089	59.7%	54.3%
2011	3.45	3,980	2.08	2,242	60.3%	56.3%
2012	3.27	3,780	2.05	2,084	62.7%	55.1%
2013	3.18	4,871	1.82	1,988	57.2%	40.8%
2014	3.13	4,614	1.95	2,423	62.2%	52.5%
2015	2.90	4,003	1.79	2,064	61.7%	51.6%
2016	2.74	3,513	1.82	1,807	66.6%	51.4%
2017	2.49	2,979	1.18	1,148	47.5%	38.6%
2018	2.14	2,570	1.19	1,235	55.5%	48.1%

3.3.2 PAP Area Source Controls

Improvements in the Facility Area have been and will continue to be performed as both short-term and long-term actions to eliminate the potential for releases and resulting loading of phosphorus to soils and groundwater beneath the plant area. The Don Plant uses a three-pronged approach to minimize the potential for groundwater impacts from the PAP Area: 1) an inspection program, 2) routine maintenance and repairs, and 3) capital projects. Details can be found in the *Phosphorus Source Control Program* (Simplot 2014).

The Don Plant operates and maintains process sumps with associated pads and separate leak detection systems throughout the complex. The purpose of these process sumps and pads is to recover product and to minimize potential for environmental impacts.

Process sumps and pads are managed in a manner to ensure that process liquids stay within the sump, pad, and associated containment areas at all times. Process sumps and pads are not used for primary containment of process materials. Process sumps and pads are for emergencies or upset conditions only and any process materials that contact them are removed immediately.

There are two separate inspections conducted and documented for all process sumps and pads. One inspection is conducted by an area operator or designee, and the second inspection is completed by the yard supervisor after a guzzler operator has removed all liquids from and otherwise cleaned the process sump.

Results from the two separate monthly inspections are recorded on the appropriate inspection form. The operator/supervisor also submits any liquid samples to the Analytical Lab for pH analysis. After the inspection is complete, the forms are submitted to the Area Supervisor for approval. The Area Supervisor must follow up on any work order and record any lab analysis results on the applicable sump inspection form. If a concern noted during the inspection relates to the integrity or functionality of a process sump system, then immediate notification must be made to the appropriate Area Supervisor.

All Don Plant employees receive web-based awareness training on the Process Sump and Pad Management Program. Specialized training on the Process Sump and Pad Management Program is given to personnel who are involved in the monthly and quarterly inspection program.

In addition to the inspection and monitoring program described above, the Don Plant continually improves or upgrades the infrastructure associated with tanks, sumps, pads, and sewers, especially in the production area (liquid and PAP area). Improvement projects are based on recommendations from the Don Plant Sump and Pad Team. These recommendations are based on the current sump/pad/tank design, equipment inspections, analytical data and other pertinent information. Finally, projects may be identified and implemented based on observed increases in contaminant concentrations and reduced pH in groundwater wells. A summary of Don Plant improvement projects completed over the last three years is including in Table 3-3.

Table 3-3. Don Plant Infrastructure Improvement Projects 2016-2018

Project	Status
On-going Tank, Pad and Sump Inspections	On-going
Tank 23 Foundation/Containment Upgrade	Completed in May 2016
Sump 6 Pad Liner and Rail Upgrade	Completed in July 2016
300 Sulfuric Acid Plant Sump and Pad Repairs	Completed in August 2016
Well Vault repairs (370, 371A/B, 372A/B, 383A/B	Completed in November 2016
Converted well 419 to high flow (20 gpm)	Completed December 2016
Well Vault repairs (370, 371, 372, 383)	Completed Fall 2017
Storm Drain Cleaning and Inspections at Granulation 1 and 2 facilities	Drain lines north of Granulation 1 and between Granulation 1 and 2 inspected and repairs made in late Fall 2017. Inspection of drain line south of Granulation 2 not yet performed.
Converted well 423 to high flow (20 gpm)	Completed October 2017
300 Sulfuric Pad	Completed Spring 2018. Deteriorated concrete seam sealants were replaced and minor cracks recoated. Applied new coating to an approximate 3x3 foot area of pad liner.
Sulfate Sump	Completed Spring 2018. Resealed cracks throughout pad area. Recoated delaminated areas around sump transition and building inlet.
G2 Sump	Completed Spring 2018. Repaired superficial cracks and replaced areas where coating had delaminated.
2 Sump	Completed Spring 2018. Replacement of concrete seam sealants and delaminated coating.
4 Sump	Completed Spring 2018. Replaced areas with delaminated coating.
5 Sump	Completed Spring 2018. Replaced areas with delaminated coating.

Project	Status
6 Sump	Completed Spring 2018. Replaced areas with delaminated coating.
7 Sump	Completed Spring 2018. Replaced concrete seam sealants.
Deflo Sump & Pad	Completed Spring 2018. Resealed superficial cracking around pad.
Transfer Pump Station	Completed Spring 2018. Replaced deteriorating pad coating and applied fresh coating to pump bases.
400 Sulfuric Pad	Completed November 2018. Deterioration of underlying concrete found and demolished, impacted soils removed, and replacement concrete with HDPE liner and coating performed.
Storm Drain Cleaning, Inspections and Repairs	Storm drain cleaning and inspections were completed in August 24, 2018. Repairs are on-going and have a target completion date of November 15, 2019.

In addition to the inspection, maintenance, and repair of process equipment, Don Plant procedures and operating practices are designed to protect the environment. If process material is released to a secondary containment pad area, then the material is removed and routed back to the process as quickly as possible. Leaks from valves, flanges, and pumps are repaired as soon as they are discovered. Simplot strives for continuous improvement to reduce and eliminate potential impacts to the environment.

The program has been effective. Table 3-4 shows the estimated reduction in the mass of phosphorus from the PAP Area in groundwater over time. The total phosphorus mass flux in pounds/day shows significant reductions through 2015 but then the downward trend has flattened. This is due to on-going releases of phosphorus from dense aqueous phase liquid resulting from releases of fluids from the Don Plant that has come to rest on top of the AFLB clay and is acting as a secondary source.

Table 3-4. PAP Area Phosphorus Mass Removed Summary

Quarter	Total P Mass Flux in Groundwater Downgradient of the PAP [1]	Total P Mass Flux Decrease Relative to Q3 2013	Mass Extracted by Groundwater System	Fraction P Mass Removed	Mass Flux Migrating Downgradient in Groundwater
	(lbs/day)	(%)	(lbs/day)	(%)	(lbs/day)
Q1 2013	1,143	45%	161	14%	982
Q2 2013	1,077	48%	63	6%	1,014
Q3 2013	2,060	0%	61	3%	1,999
Q4 2013	1,176	43%	79	7%	1,097
Q1 2014	1,950	5%	519	27%	1,431
Q2 2014	1,145	44%	306	27%	839
Q3 2014	465	77%	176	38%	289
Q4 2014	404	80%	103	25%	301
Q1 2015	756	63%	155	21%	601
Q2 2015	434	79%	49	11%	385
Q3 2015	437	79%	86	20%	351
Q4 2015	229	89%	81	35%	148
Q1 2016	183	91%	104	57%	79
Q2 2016	125	94%	68	54%	57
Q3 2016	134	93%	94	70%	40
Q4 2016	130	94%	106	82%	24

Quarter	Total P Mass Flux in Groundwater Downgradient of the PAP [1]	Total P Mass Flux Decrease Relative to Q3 2013	Mass Extracted by Groundwater System	Fraction P Mass Removed	Mass Flux Migrating Downgradient in Groundwater
	(lbs/day)	(%)	(lbs/day)	(%)	(lbs/day)
Q1 2017	138	93%	92	67%	46
Q2 2017	128	94%	59	46%	69
Q3 2017	160	92%	92	57%	68
Q4 2017	122	94%	67	55%	55
Q1 2018	106	95%	48	45%	59
Q2 2018	106	95%	62	58%	44
Q3 2018	124	94%	74	60%	50
Q4 2018	138	93%	105	76%	33

Notes:
[1] – Values include contribution from the gypsum stack which was relatively constant at about 50 lbs/day over the period from 2013 through 2019 and has declined to about 25 lbs/day by Q4 2018.

3.3.3 Gypsum Stack Lining

The gypsum stack lining project has been implemented in phases to allow for continued operation of the facility. For existing compartments, the unlined cell was taken out of service and worked to dry the surface and make it suitable for installation of a 60-mil HDPE bottom liner. Associated features were a gas venting system, stabilization underdrain, header pipes and conduits for the transfer of collected seepage to the Decant Pond, a gypsum starter dike, lined perimeter flow channel for the control of surface water runoff and decant return water flow and an inner berm for the gypsum slurry rim ditch distribution system. Water contained by the liner is returned to the Don Plant process. The implementation schedule is shown in Table 3-5.

Table 3-5. Gypsum Stack Lining Project Schedule

Gypsum Stack Compartment	Date Unlined Cell Removed from Operation	Date Lined Cell In-Service
Lower (Phase 1)	April 2010	July 2011
Upper West Compartment – North End (Phase 2)	November 2011	December 2012
Upper West Compartment – South End (Phase 3)	November 2012	March 2014
Upper East Compartment – East Side (Phase 4)	March 2014	December 2014
Lateral Expansion (Phase 6)	N/A	December 2015
Upper East Compartment – West Side (Phase 5)	April 2016	November 2017

N/A – Phase 6 was an expansion to the gypsum stack and was never operated as an unlined cell.

The estimated seepage from the unlined stack was 900 gallons per minute (gpm) (Simplot 2009). Once all receiving surfaces of the unlined stack had been lined, the calculated leakage through the liner was less than 1 gpm (Ardaman 2009) while the plant continues to operate.

At some point in the future, operation of the facility will cease, and gypsum slurry will cease to be placed on the stack. A period of "draining" or "dewatering" the remaining free liquid from the stack will follow. This is discussed in more detail in Section 4.1.2.

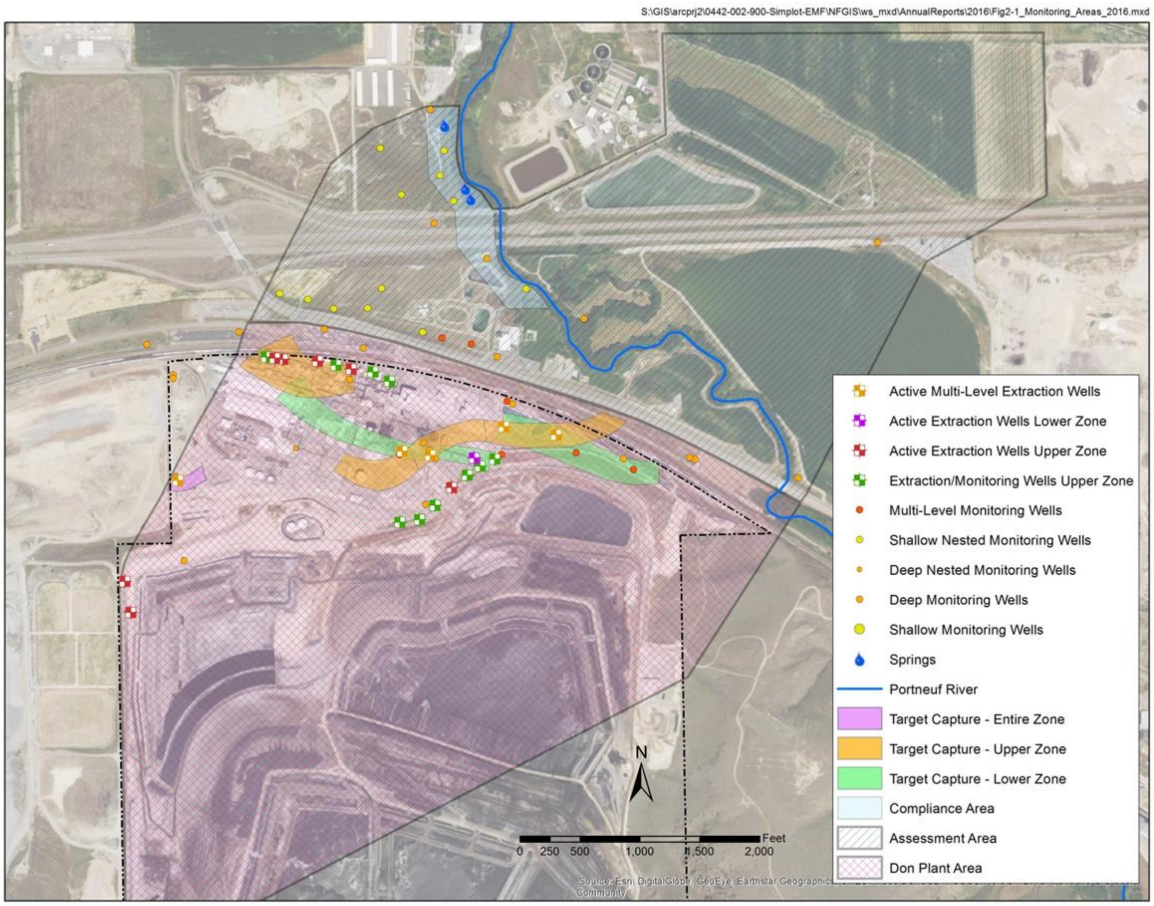
3.3.4 Groundwater Monitoring

The groundwater monitoring system for the Simplot remedy is divided into five sub-areas based on monitoring objectives, decision rules and performance criteria. The sub-areas are shown in Figure 3-2 and described in detail in the 2009 Annual Groundwater/Surface Water Remedy Report (Formation 2010b) and the Groundwater and Surface Water Monitoring Plan (Formation 2016). In summary, the sub-areas are as follows:

- **Don Plant Area:** The Don Plant Area includes potential source areas, areas immediately downgradient of potential source areas, and the target capture zones. The monitoring well network in this area provides groundwater quality data that are used to track COC concentration trends, evaluate the migration of and concentrations of COCs in groundwater to the target capture zones, and assess the adequacy of the target capture zones. The network also provides water level data at a sufficient scale so that groundwater gradients and flow paths can be evaluated.
- **PAP Area:** The PAP Area is superimposed on the Don Plant Area due to additional monitoring requirements. The additional data collection needs in this area include frequent monitoring of groundwater pH and other analytes, if necessary, to assess the effectiveness of source controls in the area.
- **Target Capture Zones:** The Target Capture Zones are also superimposed on the Don Plant Area due to additional monitoring requirements. Data collection needs in these zones include tracking groundwater flow and water levels in extraction wells, and evaluation of the quarterly water level and chemistry data from monitoring and extraction wells to assess extraction well capture.
- **Assessment Area:** The Assessment Area is downgradient of the groundwater extraction system and extends to the Compliance Area. The groundwater monitoring network in this area provides sufficient lateral and vertical spacing to delineate the plume of groundwater affected by Simplot sources. Water quality and water-level data are collected from the network of wells to confirm the position of the plume, assess trends in water quality, and assess groundwater gradients and flow paths.
- **Compliance Area:** The Compliance Area is where groundwater concentrations are measured and compared against applicable groundwater MCLs and Risk-Based Concentrations (RBCs). Similar to the Assessment Area, monitoring wells have been placed at appropriate lateral and vertical spacing to delineate the position of the plume of affected groundwater prior to discharge to the Portneuf River.

Under the current groundwater monitoring program water levels are collected at 269 monitoring wells Site-wide and samples are collected for chemical analysis at 138 locations related to the Simplot Don Plant (see Figure 3-2) on a quarterly basis. Arsenic and nitrate currently exceed the remedial action levels (MCLs) set out in the ROD for groundwater in the Assessment Area but arsenic is the only COC with concentrations currently above MCLs in the Compliance Area. There are multiple sources of ammonia and nitrate in the processing facility area that result in the elevated concentrations of nitrate observed in groundwater downgradient. Fluids that are directed to the gypsum stack do not contain elevated concentrations of ammonia or nitrate nor will the fluids that would be directed to the expanded gypsum stack or cooling ponds. There has been one nitrate concentration measured above the MCL in groundwater in the Compliance Area (in 2017; one out of over 500 samples collected since

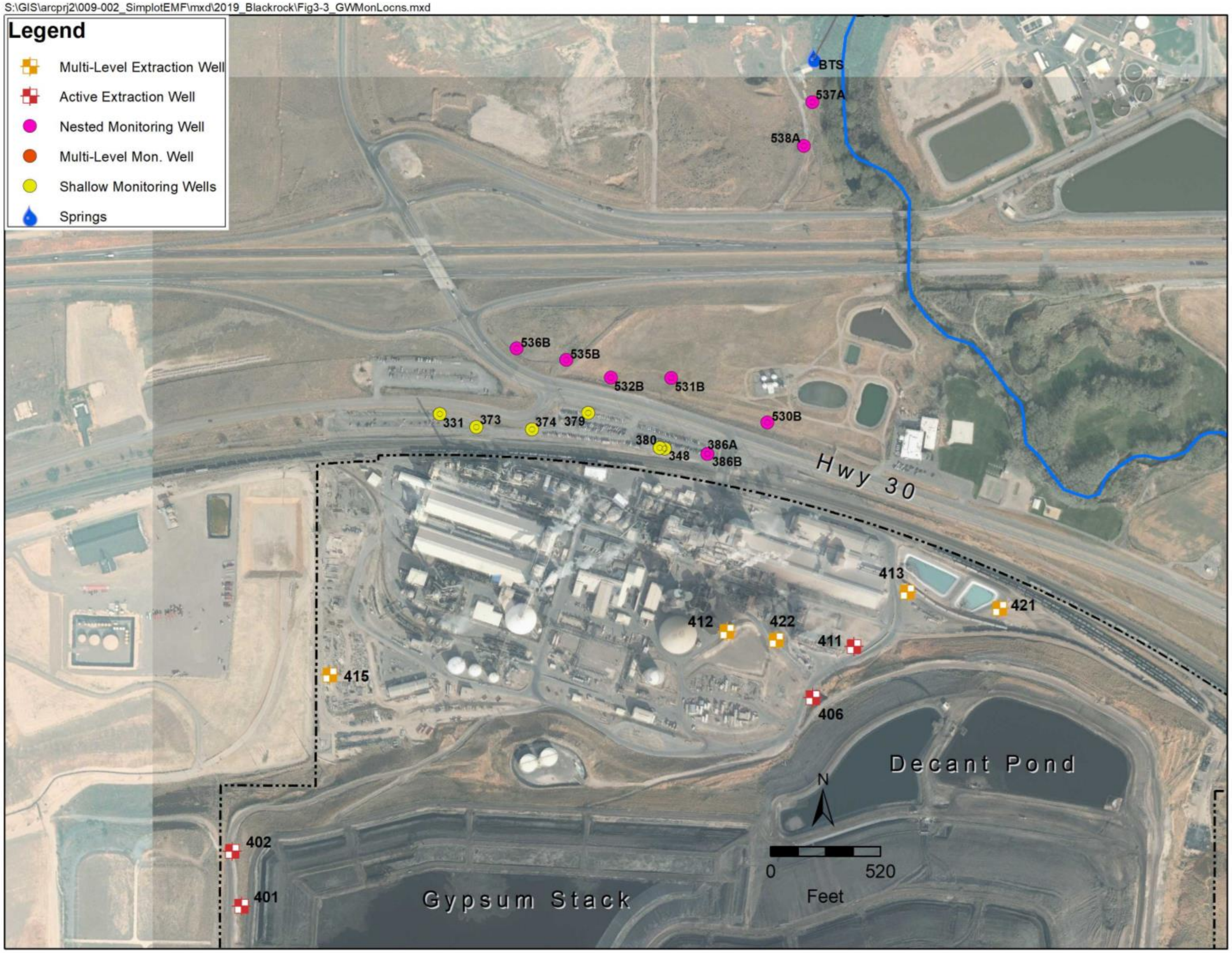
2010). Groundwater from the Site discharges to the Portneuf River. For surface water, the only COC is phosphorus (no other Site-related contaminant concentrations have ever been above standards). Therefore, because the gypsum stack and cooling ponds are associated with arsenic and phosphorus, this analysis focuses on these two COCs.



Source: Formation 2017c

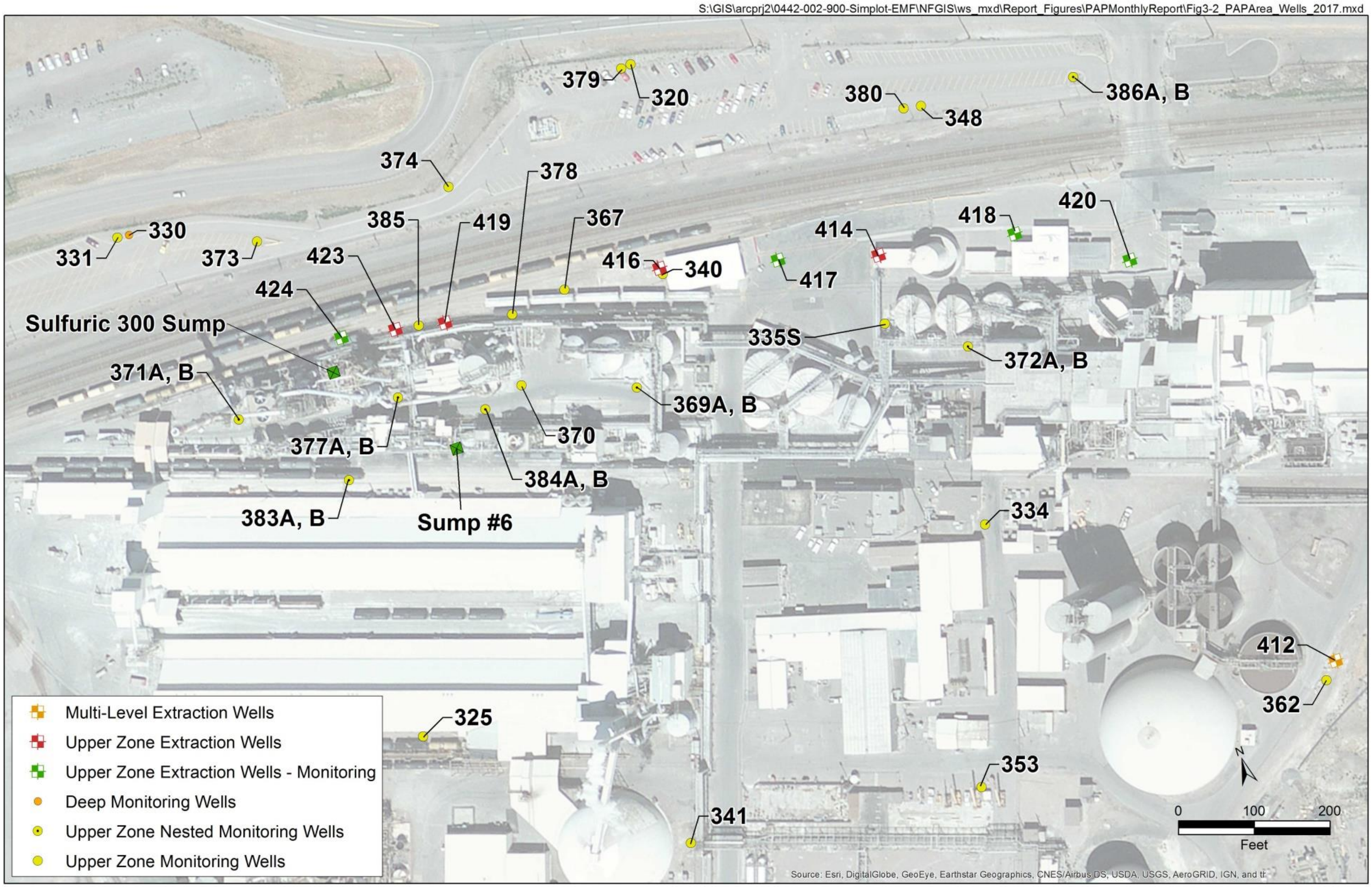
Figure 3-2. Groundwater monitoring areas and locations of monitoring and extraction wells

Locations of selected extraction and monitoring wells discussed below are shown in Figure 3-3 and locations of all wells in the PAP Area are shown in Figure 3-4. Arsenic and phosphorus concentrations in groundwater extraction wells downgradient of the gypsum stack since 2010 are shown in Figure 3-5 (East Plant Area) and Figure 3-6 (West Plant Area). Concentrations show a general downward trend in both areas as the effect of the stack lining project is realized.



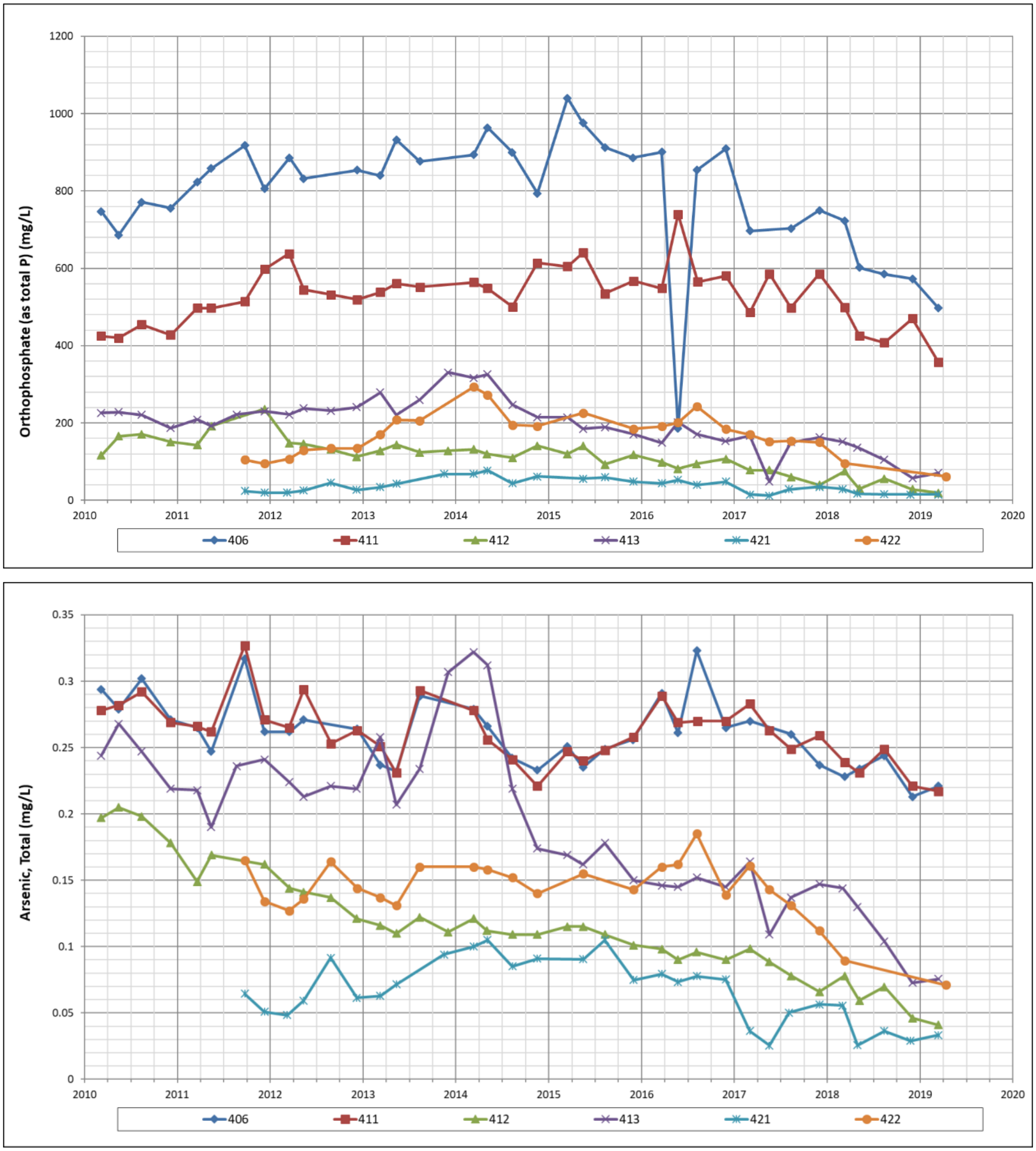
Source: Formation 2018a

Figure 3-3. Selected Groundwater Monitoring and Extraction Well Locations



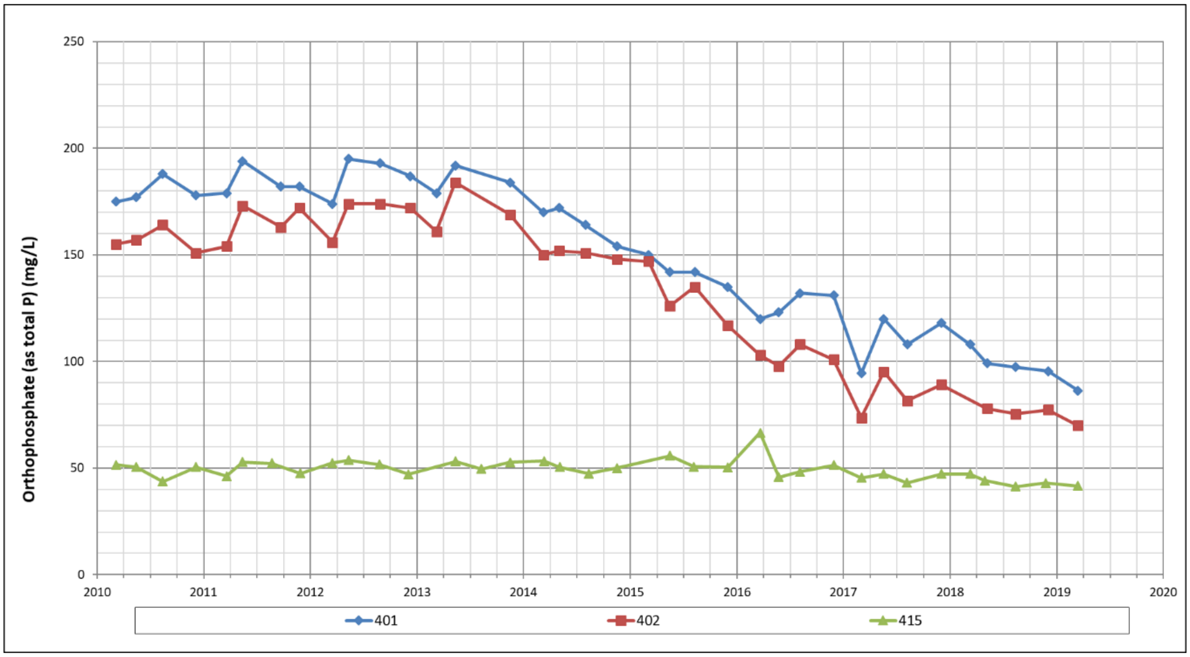
Source: Formation 2018a

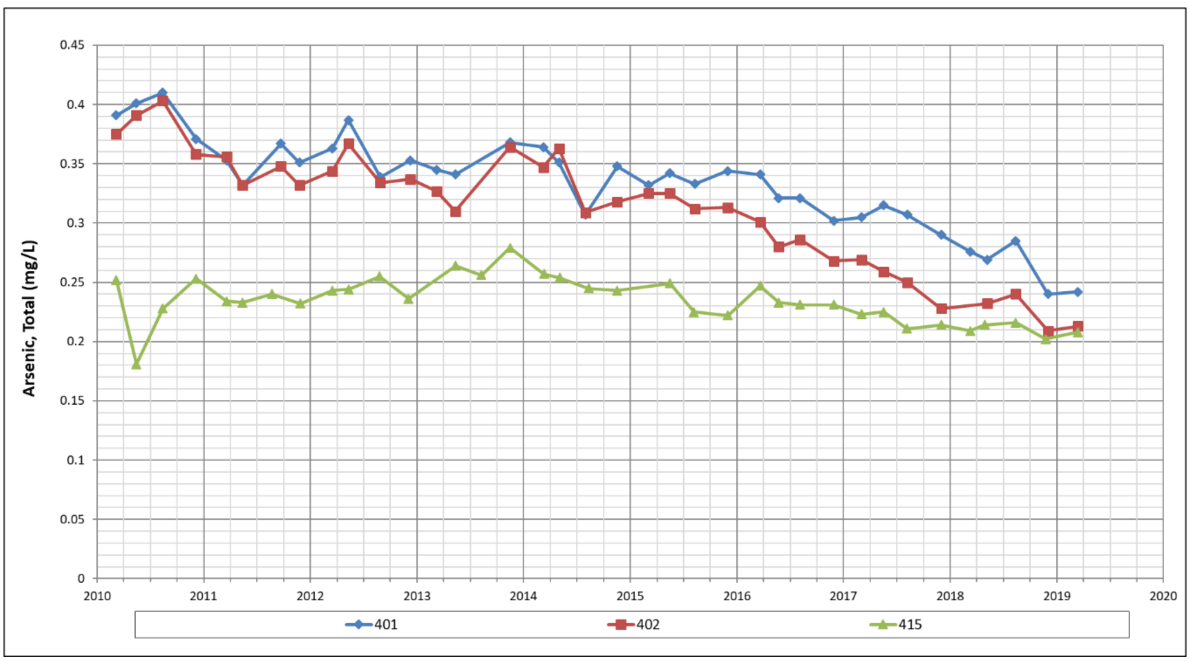
Figure 3-4. Groundwater monitoring locations in the vicinity of the PAP Area



Source: Formation 2017a

Figure 3-5. Phosphorus and arsenic concentration trends in groundwater at extraction wells downgradient of the gypsum stack (East Plant Area)



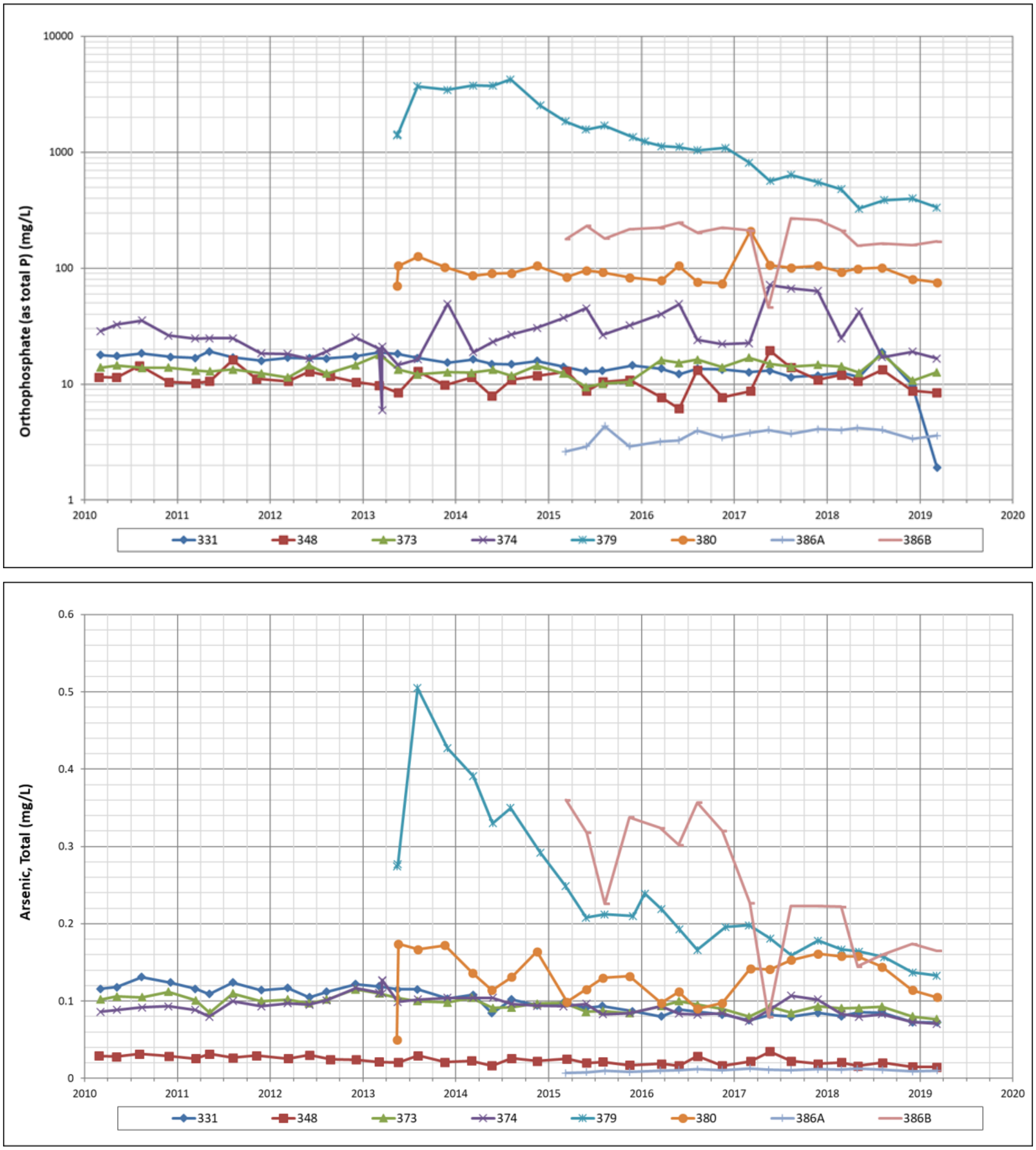


Source: Formation 2017a

Figure 3-6. Phosphorus and arsenic concentration trends in groundwater at extraction wells

Concentrations at key monitoring wells downgradient of the processing facility area are shown in Figure 3-7 (immediately downgradient of the facility; note that the y-axis on the phosphorus graph is log scale) and Figure 3-8 (farther away, adjacent to Highway 30). The data show relatively high concentrations in the 2013 to 2016 timeframe, with subsequent reductions into the range that would be expected due to the upgradient gypsum stack source with the exception of phosphorus at wells 379 and 386B. Conditions at well 379 have been shown to be related to the presence of relatively dense process liquids released to the subsurface in the vicinity of the PAP (near wells 377, 384, 419, 423, 424 see Figure 3-4) that have that pooled along the top of the AFLB clay. Contaminants from these releases have migrated

downgradient in a diffuse phase from that residual source area. Elevated concentrations of phosphorus at well 386B appear to be related to the conditions observed upgradient at well 420. As part of the Supplemental Subsurface Investigation in the Phosphoric Acid Plant Area (Formation 2013) groundwater profile samples were collected from well 420 and indicated that high concentrations of total phosphorus were present in the lowermost portion of the well (5,098 mg/L). A pumping test was performed at well 420 in 2015 (Formation 2015a) and determined that pumping was ineffective in removing the higher concentration groundwater. Concentrations in groundwater samples collected at the bottom of the well screen in well 420 have declined from a high of 6,687 mg/L in June 2013 to less than 1000 mg/L by early 2018 and since that time have fluctuated between 221 mg/L and 904 mg/L. Concentrations in groundwater samples collected from well 386B (mid-screen) generally ranged between 200 mg/L and 250 mg/L from when the well was installed in 2015 to the second quarter of 2018. Since that time concentrations have been below 200 mg/L. The concentrations in groundwater at other locations downgradient of the processing facility have returned to levels expected due to the influence of the gypsum stack alone, indicating that the residual secondary source has a limited effect on downgradient concentrations. Upgradient concentrations of phosphorus and arsenic at well 334 (Figure 3-4) were 103 mg/L and 0.263 mg/L, respectively, in the first quarter of 2019. Concentrations in groundwater downgradient of the processing facility above that expected due gypsum stack seepage continue to be investigated as part of the ongoing evaluation of source control.



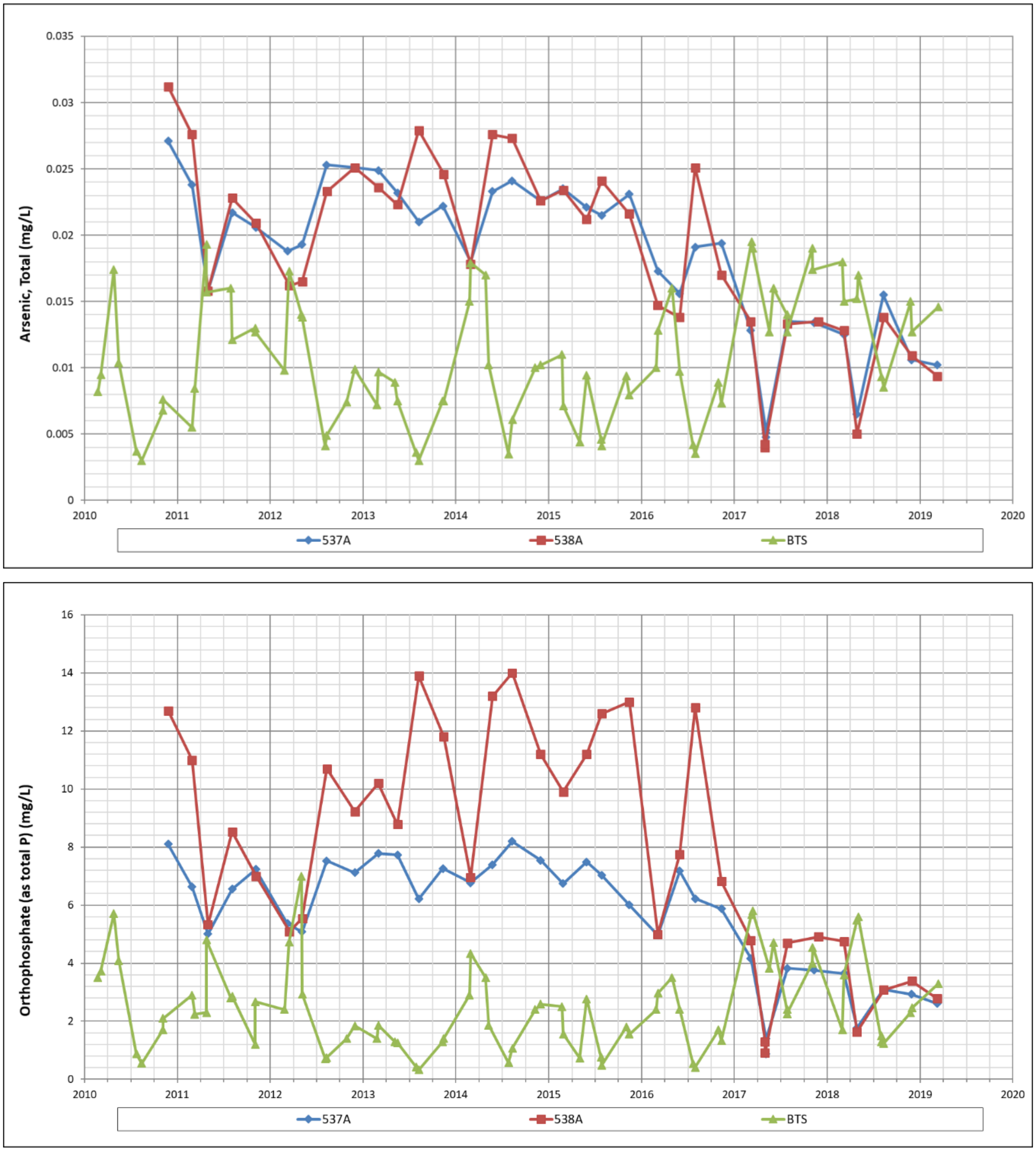
Source: Formation 2017a

Figure 3-7. Phosphorus and arsenic concentration trends in groundwater at monitoring wells immediately downgradient of the Facility Area

Source: Formation 2017a

Figure 3-8. Phosphorus and arsenic concentration trends in groundwater at monitoring wells farther downgradient of the Facility Area

Concentration trends in groundwater in key wells in the Compliance Area (i.e., in the area adjacent to the Portneuf River) are shown in Figure 3-9. There is some variability due to the fact that the plume can shift laterally and horizontally close to the river, but a general downward trend is shown, particularly in the groundwater samples collected from the monitoring wells since 2015. Concentrations in samples from Batiste Spring (BTS), located north of 537A and 538A, have not yet shown a declining trend.



Source: Formation 2017a

Figure 3-9. Phosphorus and arsenic concentration trends in groundwater at monitoring wells in the Compliance Area

3.3.5 Surface Water Monitoring

Monitoring of surface water in the Lower Portneuf River is performed once per month by IDEQ and Simplot personnel. Water samples are collected from the river at Batiste Road (just upstream of the influence of EMF groundwater) and Siphon Road, as well as at other key locations. The measured monthly total phosphorus concentrations for the last 10 years are shown in Figure 3-10. The green line

connects the actual data points. The blue line is the rolling 12-month average concentration. The decrease in concentrations as a result of Simplot's remedial actions is shown.

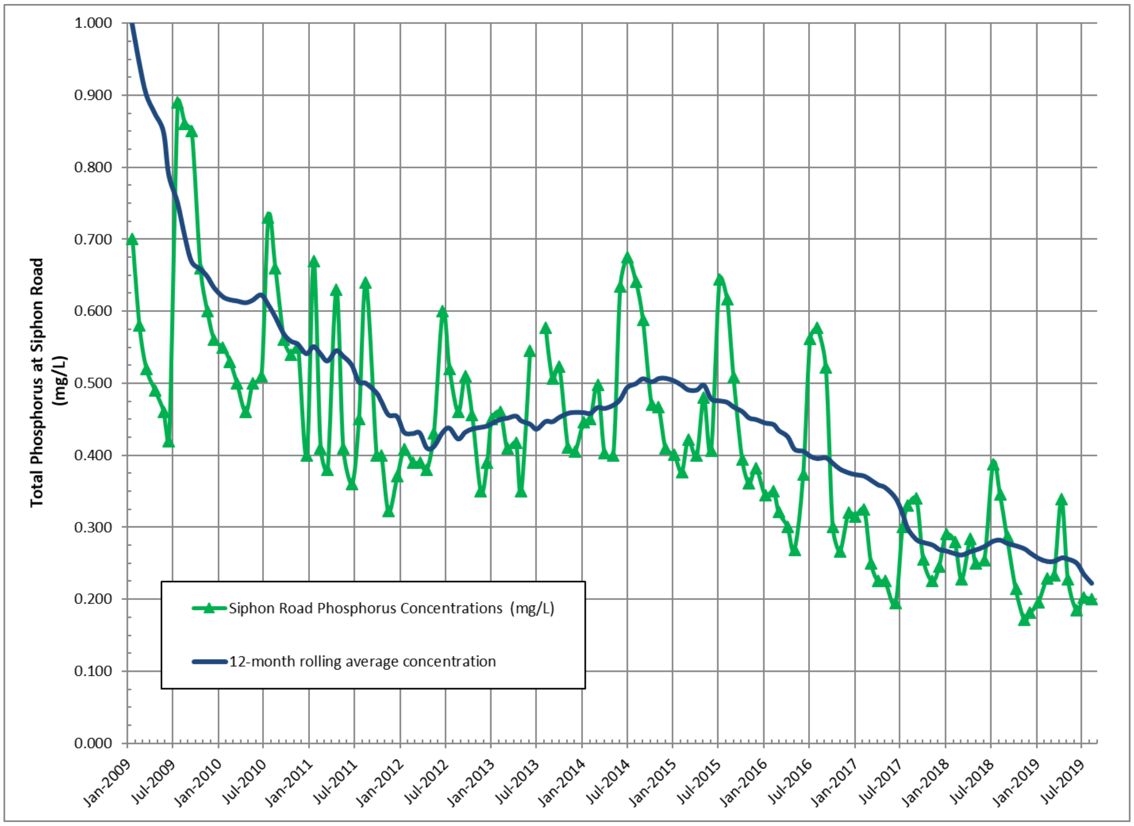


Figure 3-10. Phosphorus concentration in the Portneuf River at Siphon Road

In addition, predictive modeling was performed for phosphorus concentrations in the Portneuf River. The results were reported in *Portneuf River Final Phosphorus Concentration Target Evaluation* (Formation 2017b), which was an appendix to the Revised Remedial Action Plan (Simplot 2016b) and the Groundwater/Surface Water 2017 Annual Report (Formation 2018b). That model provides the basis for temporal predictions presented herein, as described in detail in Section 4.

4.0 SUPERFUND REMEDY GROUNDWATER AND SURFACE WATER ASSESSMENT

This section provides details of current groundwater and surface water quality and predictions of arsenic and phosphorus concentration trends over time as a result of the implementation of the remedial actions under CERCLA and the VCO/CA. Any contaminants that are released from the proposed expansion area would migrate to areas where groundwater contamination exists from past releases from the gypsum stack. Also, all groundwater discharges to the Portneuf River. Therefore, this report evaluates water quality in key areas downgradient of the proposed features, including areas where contamination already exists (and that are being monitored under CERCLA to evaluate the effectiveness of response actions). The effect of the CERCLA and VCO/CA response actions are the baseline case for this evaluation.

Further, the baseline analysis provided in this document is not intended to provide an assessment of long-term compliance with the VCO/CA. While, the model presented herein is consistent with the structure of the VCO/CA model (with some additions), there are several important changes and simplifications such that the results should not be viewed as providing an assessment of VCO/CA compliance. Firstly, the time step for this model is annual and all inputs have been averaged over a year (the VCO/CA model uses monthly inputs). This has a significant effect on the estimation of inputs that are highly seasonal (i.e., Portneuf River flow and upstream sources). Secondly, inputs have been estimated based on recent data and these are expected to be refined in the VCO/CA model as more data become available (for example, the effect of Simplot response actions on water quality, Portneuf River flows and the magnitude of non-Simplot sources to the river). Assessing Simplot's compliance with the regulatory requirements identified in the 2008 VCO/CA and the 2010 IRODA is the responsibility of DEQ and EPA outside of the NEPA process.

4.1 Model Used for Phosphorus Transport in Groundwater Over Time

4.1.1 Model Summary

Predictive modeling of the changes in phosphorus mass flux in groundwater and consequent mass flux discharge to the Portneuf River and concentration in the river as a result of remedial actions was performed under the VCO/CA in 2017. The results were reported in *Portneuf River Final Phosphorus Concentration Target Evaluation* (Formation 2017b). The report provided the most recent update to the CSM for phosphorus mass transport from Simplot sources in groundwater to surface water. The conceptual model for phosphorus transport in groundwater from Simplot sources to the river is summarized in Figure 4-1.

The CSM was set up in a spreadsheet model that was calibrated based on the latest data to predict mass flux of phosphorus reaching the river in the future. This model was first developed under the VCO/CA in 2009 (Simplot 2009). At that time, it was expected that the gypsum stack lining project would be implemented in three phases (Lower Compartment, Upper West Compartment and Upper East Compartment). Based on the nature of the Don Plant gypsum (drying and erosion properties), the lining project was implemented in five phases instead of three. The model structure was adjusted to account for this. The latest model run was produced in 2017 (Formation 2017b) and the model used for the

evaluation described herein, was essentially the same as the 2017 model, recalibrated using the latest data, as described below.

As shown, the model takes a mass balance approach and is calibrated using current Site groundwater and surface water data. Additional details regarding the above assumptions are described in the following paragraphs.

4.1.2 Model Calibration

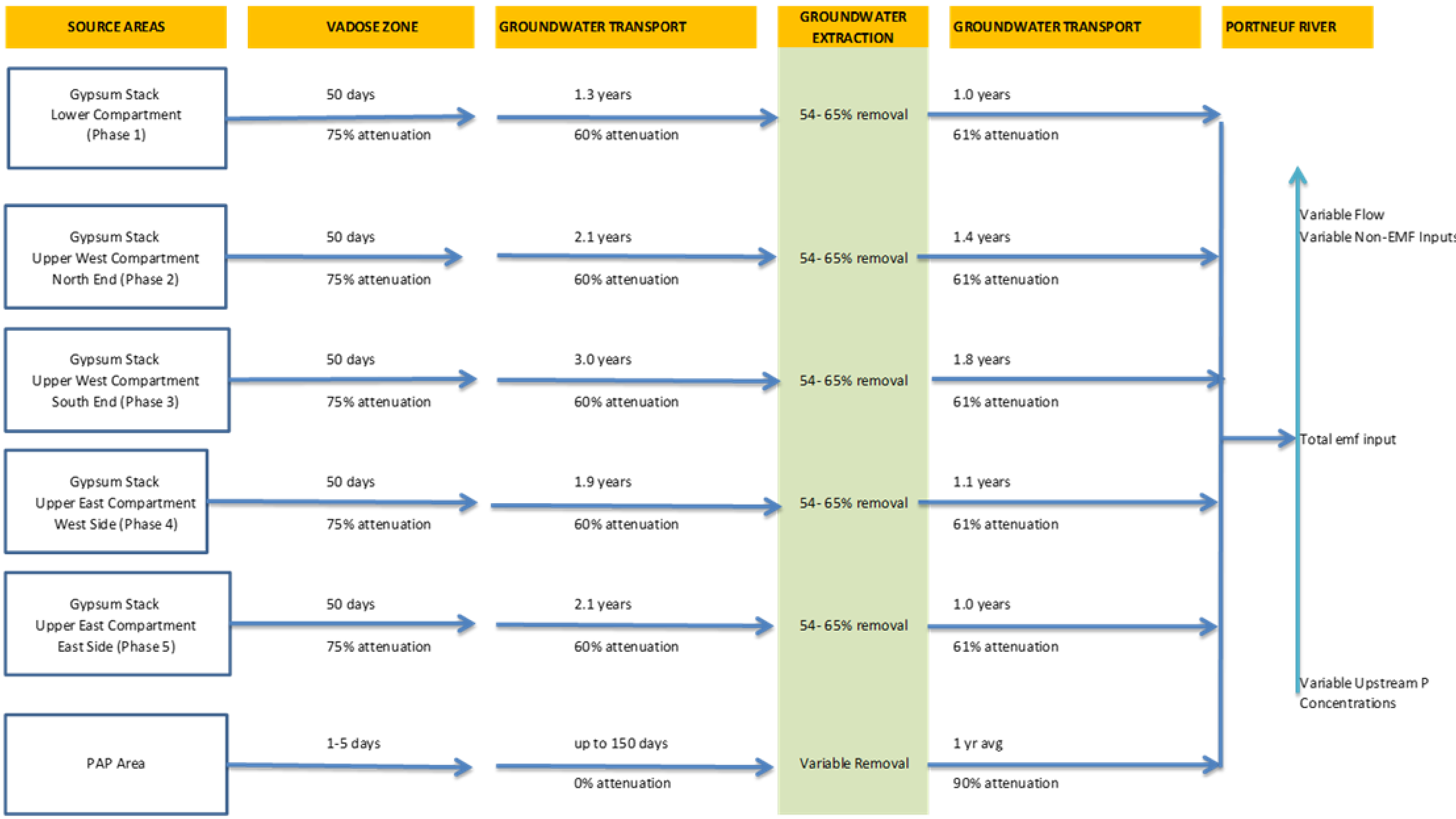
The model uses current conditions to calibrate certain input parameters. Input parameters were defined as discussed below.

Timing of Source Control for Gypsum Stack Areas was updated with actual dates as shown in Table 4-1. The gypsum stack areas are shown in Figure 4-2. The East Side of the Upper East Compartment stopped receiving gypsum slurry in March 2016; however, the lining was delayed due to the longer time needed to dry out the cell and the need for additional stockpiling of gypsum for construction. The East Side of the Upper East Compartment was lined and returned to operation in November 2017. An evaluation of the impacts of leaving the cell open over the 2016/2017 winter found that it would result in minimal changes to the phosphorus concentrations in the Portneuf River (Simplot 2016a). Therefore, the date of source control (when ponding was eliminated) was set at August 2016. Liner installation in the Phase 6 Lateral Expansion Area of the gypsum stack (not part of the CERCLA remedy) was finished in 2015 and the compartment became operational in December. The project to line all receiving surfaces, and therefore, the source control action required under CERCLA is also complete.

Table 4-1. Source Control Dates for the Gypsum Stack Lining Project.

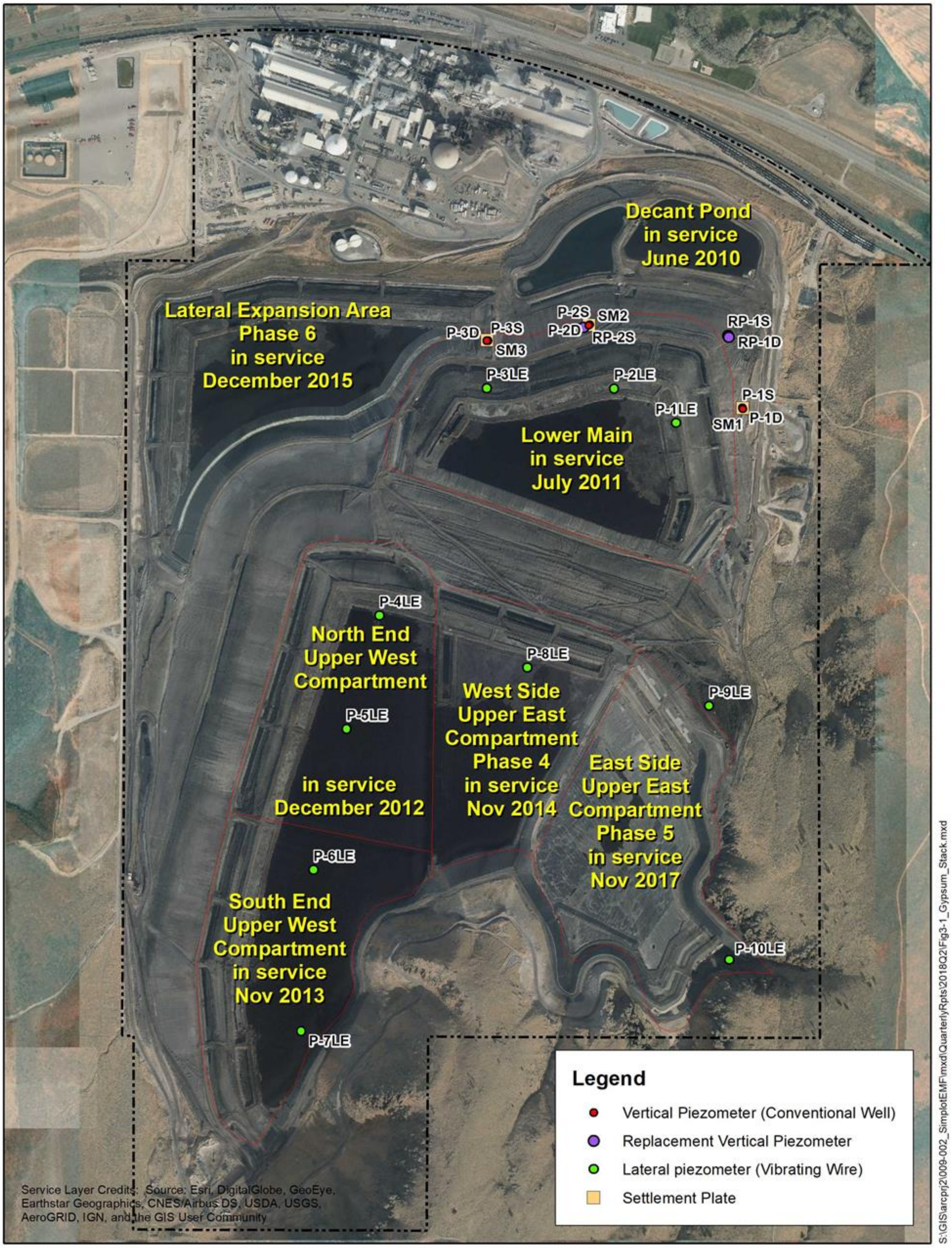
Gypsum Stack Cell	Initial Design – Date Source Controlled	Lining Area	Actual Date of Source Control
Lower Compartment	May 2010	Phase 1	April 2010
Upper Western Compartment	May 2012	North End (Phase 2)	November 2011
		South End (Phase 3)	November 2012
Upper Eastern Compartment	May 2014	West Side (Phase 4)	March 2014
		East Side (Phase 5)	August 2016
Lateral Expansion	N/A[1]	Phase 6	N/A[1]

[1] The lateral expansion area was never operated as an unlined cell and so was never a source. It was operational in December 2015.



Source: Formation 2017b

Figure 4-1. Conceptual model for phosphorus transport from existing Simplot sources to the Portneuf River



Source: Formation 2018c

Figure 4-2. Gypsum Stack Layout

Phosphorus loading from Gypsum Stack Compartments after lining was taken from *Technical Report No. 1* (Simplot 2009). The predicted change of mass flux from the gypsum stack over time was based on draindown curves developed by the gypsum stack design engineer, Ardaman and Associates (Ardaman 2009). These show the predicted seepage from the gypsum stack to groundwater over time after use as an unlined compartment is ended and are reproduced in Figure 4-3.

At that time, the lining project was planned in three phases (Lower, Upper West and Upper East compartments). Because the project ultimately split the upper compartments into two phases each, the previous seepage reduction calculations were modified for these areas as follows:

- Total seepage from Upper West and Upper East compartments was kept the same and the relative seepage from each phase was estimated at 50% (Formation 2017a).
- The gypsum stack thickness was evaluated for the Phase 3 (Upper West Compartment North End) and Phase 5 (Upper East Compartment East Side) areas. These compartments are adjacent to the mountain and were found to have average thicknesses similar to the Lower Compartment. Therefore the relative rate of seepage reduction from these areas over time was modeled consistent with the Lower Compartment (Phase 1) curve (i.e., Phase 3 and Phase 5 areas are predicted to be substantially dewatered in about 9 years; the same as the Phase 1 area).

In addition to the draindown of the gypsum stack beneath the liner, leakage through the liner was also incorporated into the revised model. Leakage is assumed to be constant during the period of active operation based on the area of the liner for each compartment and the maximum leakage rate estimated by Ardaman and Associates (2009) of less than 0.010 inches/year (in/year) (0.0005 gpm/acre). Leakage is then assumed to decline to zero over a period lasting approximately 50 years after operations cease.

Phosphorus attenuation in the unsaturated zone beneath the Gypsum Stack was estimated to be as high as 90% in *Technical Report No. 1* (Simplot 2009). The pre-lining seepage rate was estimated to be approximately 900 gpm, and using a measured phosphorus concentration of 3,928 mg/L in the gypsum slurry liquid, the initial loading from seepage was estimated at 42,000 lb/day. This high attenuation factor is consistent with phosphorus concentrations measured in soil samples collected during the Remedial Investigation (Bechtel 1998). The samples were collected in soils from immediately below the gypsum to total depths ranging from 145 to 220 ft below the ground surface; on some occasions into groundwater. The results indicate that, as seepage migrates through the vadose zone beneath the stack, the total phosphorus concentration in soil decreases significantly from the top of the vadose zone to the saturated zone. The attenuation factor was also consistent with the estimated mass in groundwater entering the target capture zones at the time.

In the updated phosphorus transport model (Formation 2017b) the attenuation factor was reduced to 75% to provide a better match to the estimated mass in groundwater entering the target capture zones. Mass of phosphorus, sulfate, and arsenic is estimated on a quarterly basis as part of the groundwater/surface water remedy effectiveness monitoring evaluation and is based on the estimated flow rate of gypsum stack affected groundwater and results of chemical analysis of groundwater samples. This attenuation factor is an average overall rate for all portions of the gypsum stack and is therefore applied without adjustment for each of the gypsum stack compartments in Figure 4-1. Recent estimates of mass in the target capture zones are likely biased high as the flow rate of affected groundwater is assumed to be constant but is decreasing over time due to gypsum stack lining. While the resulting adjustment of the attenuation factor may be an under estimate of actual attenuation, the factor was kept the same in the calculations performed herein.

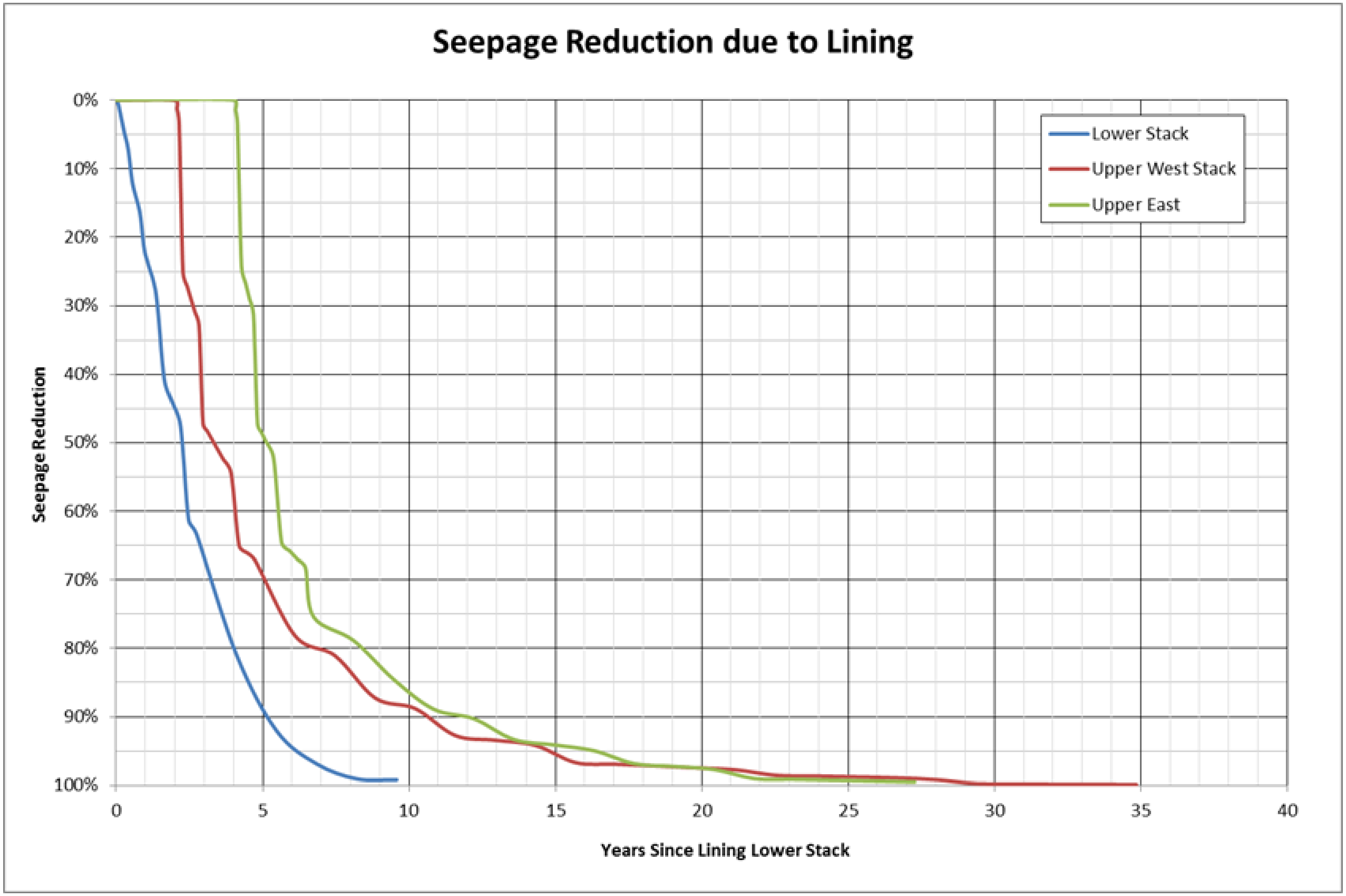
Phosphoric Acid Plant (PAP) Area loading The model assumes no future new issues with phosphorus releases from the PAP Area that would provide load to the river.

Groundwater travel times along the flow path to the Portneuf River were estimated using two methods. Groundwater velocities from the gypsum stack to the target capture zones can be estimated based on the response observed in downgradient monitoring wells. Travel times from the target capture zones to the river were calculated using hydraulic properties of the saturated zone (hydraulic conductivity, gradient and porosity)

Phosphorus attenuation in groundwater from the stack to the target capture zone was estimated at 60% in *Portneuf River Final Phosphorus Target Evaluation* (Formation 2017b). This evaluation is still valid and was used in the current model. Attenuation rates are not expected to change over time. The unlined stack operated for approximately 70 years during which time significant build up of phosphorus would have occurred. The estimated attenuation rates are consistent with that situation. In the future, phosphorus concentrations (and loading) will be significanty reduced and are therefore not expected to affect the ability of the soil and aquifer solids matrix to attenuate phpshorus. The attenutation is assumed to be irreversible. This is based on the identification of calcium phosphate being the main form in the soils/aquifer solids (Simplot 2009), which has very low solubility.

Phoshorus removed by groundwater extraction was set at 60% for dates prior to 2019 in the current model to better match the historical phosphorus load being measured in the Portneuf River. This rate is slightly higher than the 2018 annual average of 52% (Formation 2019a) and the value used in the 2017 model, 54% . This adjustment may indicate that the estimate of the mass flux entering the target capture zones is too high. The future removal percentage is estimated to be 50% until groundwater extraction is projected to be no longer needed to meet the phosphorus concentration target in the Portneuf River (estimated to be 2025). Note that this is an assumption for the model. The decision on groundwater extraction will be made by EPA in the future considering the available data and the requirements and goals under CERCLA.

Phosphorus attenuation in groundwater from the target capture zone to the Portneuf River was originally estimated at 39% in *Technical Report No. 1* (Simplot 2009) based on estimates of mass in the target capture zones and mass in the Porteuf River based on groundwater and surface water data collected over the period from 2000 to 2002. In *Portneuf River Final Phosphorus Target Evaluation* (Formation 2017b) the attenuation rate was adjusted upward to 61% based on quarterly estimates of phosphorus mass leaving the target capture zones and mass in the Portneuf River. The higher attenuation rate may be the result of an overestimate of mass in the target capture zones. This evaluation is still valid and was used in the current model. See above for a discussion of attenuation rates going forward.



Source: Ardaman 2009

Figure 4-3. Predicted reduction of seepage from the gypsum stack due to lining

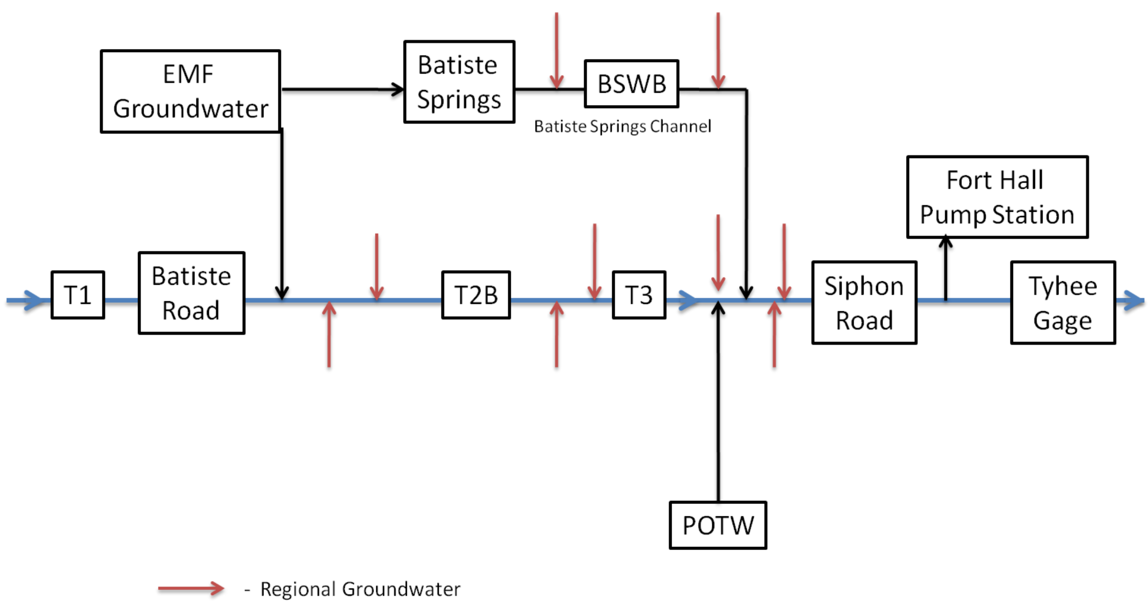
4.2 Model Used to Estimate Arsenic Concentrations in Groundwater Over Time

The portion of the phosphorus model that predicts mass flux in groundwater at the Target Capture Zones was used to predict changes in arsenic concentrations over time. The current arsenic concentrations were set based on the most recent monitoring data. Future predictions were made by assuming the relative reductions in arsenic mass flux would be the same as for phosphorus (see Figure 5-2) and that concentrations are proportional to mass flux.

4.3 Model Used to Estimate Phosphorus Concentrations in Surface Water Over Time

4.3.1 Conceptual Model

River flow is measured along the Lower Portneuf River and at point source locations (i.e. the Pocatello Waste Pollution Control Plant "Publicly Owned Treatment Works" [POTW]) in order to evaluate the loads of contaminants entering the river, analyze seasonal variations, and also to evaluate the influx of regional and EMF groundwater. A simple conceptual model of sources and monitoring locations for the Lower Portneuf River has been developed (Formation 2017a) and is presented in Figure 4-4.



Source: Formation 2019a

Figure 4-4. Conceptual model of inputs for the lower Portneuf River

This model indicates where point source inputs are located with respect to other sources and the estimated influx locations for non-point sources.

The mass balance for the system is as follows:

Mass Input = Mass Output

Note: assumes no storage; none has been observed.

Expanding for each parameter:

Mass from Upstream + Mass from EMF + Mass from POTW + Mass from Regional Groundwater = Mass Downstream

At each river location mass is calculated by multiplying concentration by flow and solving for the concentration in the river at Siphon Road yields:

$$C_{siphon} = (C_{batiste} * F_{batiste} + EMF_{mass} + C_{POTW} * F_{POTW} + C_{groundwater} * F_{groundwater}) / F_{siphon}$$

Where:

C_{siphon} = Phosphorus concentration in the Portneuf River at Siphon Road

$C_{batiste}$ = Phosphorus concentration in the Portneuf River at Batiste Road

$F_{batiste}$ = Flow in the Portneuf River at Batiste Road

EMF_{mass} = mass flux of phosphorus discharging to the river from EMF groundwater

C_{POTW} = Phosphorus concentration in POTW effluent

F_{POTW} = POTW effluent flow

$C_{groundwater}$ = Phosphorus concentration in regional groundwater discharging to the river

$F_{groundwater}$ = Flow rate of regional groundwater discharging to the river

F_{siphon} = Flow rate in the Portneuf River at Siphon Road

4.3.2 Model Inputs

This modeling effort is over a longer timeframe than previously estimated and therefore it was decided to use annual time steps in the model. This will provide sufficient accuracy for the cumulative effects analysis.

The model inputs were calculated as described below.

Mass Flux of Phosphorus from EMF Site Groundwater

The output of the model described above in Section 4.1 provides the estimate of the phosphorus mass flux from EMF Site groundwater to the Portneuf River over time.

River Flow Rate at Siphon Road

Flow rates in the Portneuf River are measured by the United States Geological Survey (USGS) at the Tyhee gage.[2] Water removed from the river by the Fort Hall Pump Station are reported by the Idaho Department of Water Resources (IDWR).[3] The available annual average flows are shown in Table 4-2. The flow in the river at Siphon Road is calculated by adding the values together (see Figure 4-4). As shown, the overall average annual flow in the Portneuf River at Siphon Road is calculated at 471 cubic feet per second (cfs).

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[2] https://waterdata.usgs.gov/usa/nwis/uv?site_no=13075910

[3] https://www.idwr.idaho.gov/water-data/water-rights-accounting/research.html (*River System = Upper Snake River, Site ID = 13075900 FORT HALL MICHAUD PUMP)*

Table 4-2. Portneuf River Flows (cfs) at Batiste Road

Year	Annual Average Flow at Tyhee Gage (cfs)	Annual Average Flow Removed at Fort Hall Pump (cfs)
1986	834	
1987	515	
1988	409	
1989	419	
1990	367	
1991	400	
1992	319	
1993	457	
1994	372	
2002	344	52
2003	309	56
2004	313	52
2005	385	45
2006	533	51
2007	371	55
2008	343	62
2009	438	49
2010	395	62
2011	528	54
2012	385	69
2013	340	59
2014	315	60
2015	318	57
2016	357	49
2017	595	45
2018	470	56
Average	417	55
	Total	471

4.3.3 Upstream Phosphorus Load

River discharge and phosphorus concentrations are measured on a monthly basis at Batiste Road. In order to estimate current conditions, the last 10 years of data were analyzed. Based on the results shown in Table 4-3 a conservative average annual upstream phosphorus load of 188 pounds per day (lbs/day). Note that the estimated load is conservatively assumed to remain constant in the future, but there are many variables that can effect this value. It is expected to decrease as TMDL-related actions are performed in the upstream watershed, which would result in lower phosphorus concentrations in the river at Siphon Road.

Table 4-3. Phosphorus Loads in the Portneuf River at Batiste Road

Month	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	average
January	50	108	879	36	39	30	36	21	26	76	136
February	44	56	94	131	325	42	37	58	283	349	119
March	232	205	328	647	140	638	42	283	434	77	328

Month	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	average
April	1020	440	2655	309	386	131	48	332	805	855	681
May	271	193	2240	30	73	147	33	344	961	817	477
June	598		955	14	14	19	144	39	503	201	286
July	33	13	69	26		10	8	7	31	18	25
August	16	10	32	10	5	7	8	7	33	10	14
September	29	18	69	12	55	14	11	7	20	15	26
October	106	44	129	25	19	69	80	82	107	102	74
November	41	40	39	70	23	22	63	123	66	26	54
December	27	68	37	67	30	24	9	11	74	35	39
										Overall Average	188

Loads in pounds per day.

4.3.4 POTW Effluent Load

The phosphorus concentration in the POTW effluent discharging to the river is measured in each monthly sampling event. A typical effluent flow of 10.6 cfs was used to estimate phosphorus loading. The POTW has implemented significant actions to reduce phosphorus load to the river, so just the last year of data are analyzed. As shown in Table 4-4, the estimated average annual phosphorus load from the POTW is 16 lbs/day.

Table 4-4. Phosphorus Loads to the Portneuf River from the POTW Effluent

Month	2018	
	Phosphorus Concentration (mg/L)	*Phosphorus Load (lbs/day)*
January	0.190	11
February	0.124	7.5
March	0.134	8.1
April	0.176	8.8
May	0.378	17
June	1.580	82
July	0.126	6.9
August	0.091	5.2
September	0.218	13
October	0.316	15
November	0.144	6.7
December	0.196	9.1
	Average	16

4.3.5 Background Load From Regional Groundwater

A significant flow enters the river in the reach of interest. In the 2010 revision of the Portneuf TMDL (at page 98 and 128) IDEQ assigned a load allocation to groundwater phosphorus of 48.6 lbs/day. This was derived from an assumption that groundwater gained 225 cfs in the river from Batiste Road to Siphon Road, and considered an estimated groundwater total phosphorus concentration to be at 0.04 mg/L.

However, it appears that the average background phosphorus concentration in regional groundwater is approximately 0.02 mg/L, based on groundwater data in and around the Portneuf and Snake plain aquifers regionally (IDEQ 2004). Therefore 0.02 mg/L was used in this evaluation. This is consistent with previous evaluations.

Groundwater flow input was calculated using the 10 years of flow measurements made during routine sampling events. Using these data and an effluent flow for the POTW, groundwater discharge to the river can be calculated as shown in Table 4-5. Using the average annual flow of 252 cfs and a phosphorus concentration of 0.02 mg/L yields an average annual load of 27.1 lbs/day.

Table 4-5. Groundwater Discharge to the Portneuf River Between Batiste Road and Siphon Road.

Month	Batiste Road Avg Flow (cfs)	POTW Effluent Flow (cfs)	Siphon Road Avg Flow (cfs)	Calculated Groundwater Input (cfs)
January	204	11.0	488	273
February	218	11.2	493	265
March	303	11.2	555	241
April	482	9.2	696	204
May	453	8.5	660	198
June	327	9.6	551	215
July	73	10.2	340	257
August	55	10.5	323	257
September	76	10.7	371	284
October	174	8.6	472	289
November	208	8.6	493	276
December	187	8.6	462	266
			Average	252

4.3.6 Model Used in Evaluation

The values calculated above were used in the mass flux calculation shown in Section 4.3.1 to generate the following relationship.

$$C_{siphon}\text{ (mg/L)} = (188 + EMF_{mass}\text{ [lbs/day]} + 16 + 27)/\ (471*5.394)$$

where 5.394 is the conversion factor to lbs/day when using concentration in mg/L and flow in CFS. This simplifies to

$$C_{siphon} = (EMF_{mass} + 231)/\ (2{,}541)$$

Note that this assumes that there will be no changes in the non-EMF input parameters in the future.

5.0 MODELING AND ASSESSMENT OF IMPACTS TO GROUNDWATER AND SURFACE WATER FROM REASONABLY FORESEEABLE ACTIONS

5.1 Technical Approach

The concept for the proposed expansion for the gypsum stack and the new cooling ponds is shown in Figure 5-1. The request for a quantitative assessment of potential cumulative impacts to groundwater resulting from the expansion was set out in a letter from Bryce Anderson, BLM, to Wendy Fuell, Simplot, dated March 26, 2019 (BLM 2019). The modeling and assessment tasks were outlined in the letter as follows:

1. Modeling and assessment of the ongoing operations at the Don Plant (including the existing gypsum stacks and cooling ponds and contributions of other facilities/activities associated with the Don Plant) and the modeled effects of impacts to groundwater and surface water over the cumulative impacts assessment period. This component of the assessment will represent the baseline for cumulative impacts during the assessment period.
2. Modeling and assessment of impacts to groundwater and surface water from the expanded gypsum stacks and cooling ponds on the Federal Lands included in the Blackrock Land Exchange over the cumulative impacts assessment period. This component of the assessment will represent the incremental contributions to cumulative impacts from the Reasonably Foreseeable Actions.
3. Modeling and assessment of the total cumulative effects including the ongoing operations at the Don Plant (#3 above) combined with the incremental contributions/effects from the expanded gypsum stacks and cooling ponds on the Federal Lands (#4 above) over the cumulative impacts assessment period. This component of the assessment will represent the total cumulative effect.

The analyses from tasks 3 and 4 are combined to predict the potential cumulative effect of the expanded gypsum stacks and cooling ponds (task 5), both in terms of identifying the maximum increase in COC concentrations in groundwater and providing predictions of the temporal trends for arsenic and phosphorus concentrations in groundwater and for phosphorus concentrations in surface water.

The general technical approach for these tasks is described in the work plan (Formation 2019b), specific data used, and results of the assessments are provided in the following subsections.

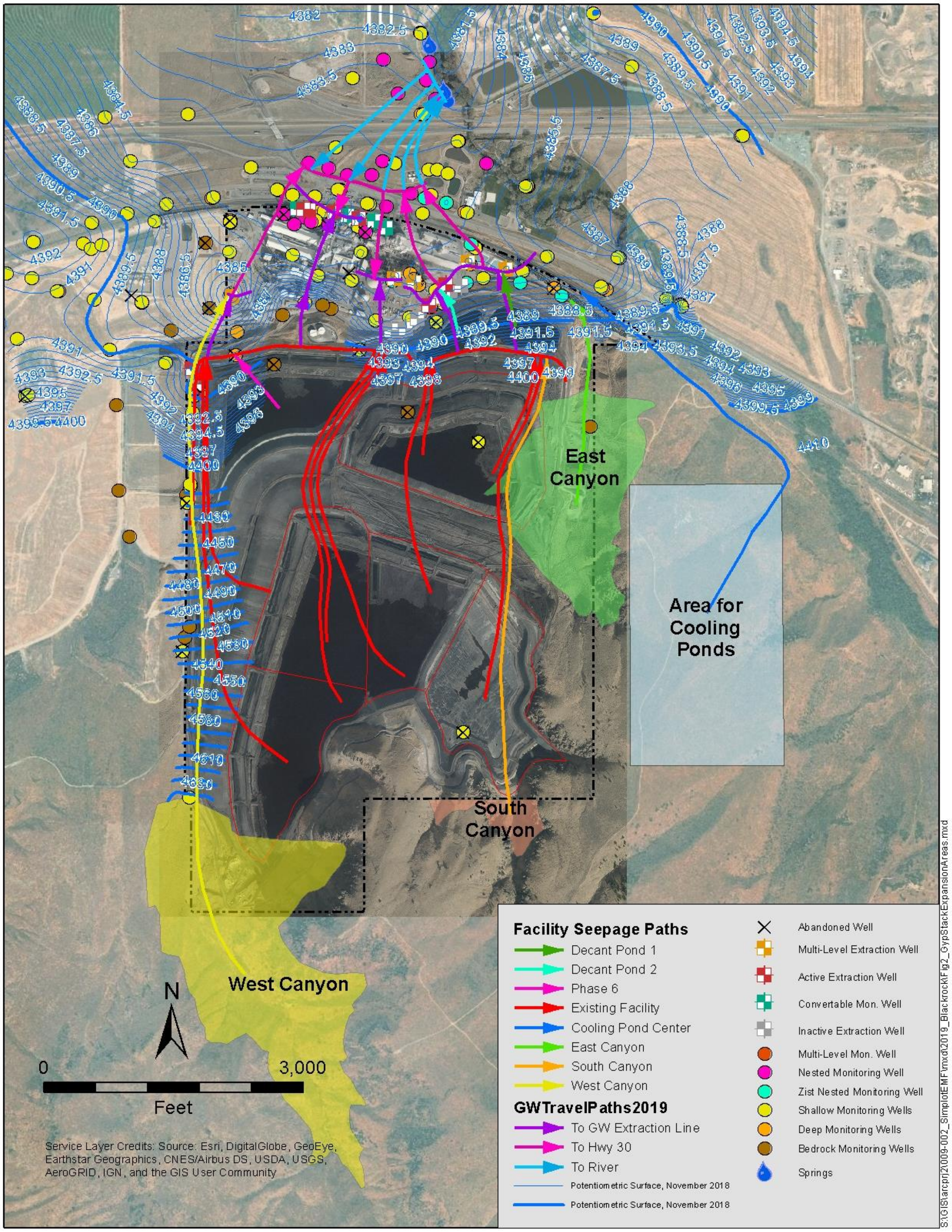


Figure 5-1. Proposed expansion areas and groundwater flow paths

5.2 Modeling and Assessment of Ongoing Operations

To assess impacts to groundwater and surface water quality from ongoing operations and current conditions, the modeling performed as part of the CERCLA and VCO/CA remedial action evaluation was updated using the most recent groundwater data (including groundwater chemistry, potential and extraction), as described in Section 4. The updated model (see Figure 5-2) provides a prediction of arsenic and phosphorus concentrations in groundwater and phosphorus concentrations in surface water over time as remedy components transition to full effectiveness. To be consistent with the evaluation of the proposed expansion, ongoing operations are assumed to continue until 2085.

As described in Section 4, the phosphorus transport model provides estimates of phosphorus mass flux along the pathway from the existing gypsum stack to the Portneuf River. It has been updated in this report to include the pathways from the proposed gypsum stack expansion areas and the new cooling ponds. Parameters remain the same as in the model used in the *Portneuf River Final Phosphorus Target Evaluation* (Formation 2017b) where attenuation parameters for the existing gypsum stack were adjusted to provide a better match of mass flux estimates in groundwater in the target capture zones and the Portneuf River. The average attenuation factors are potentially greater for the expansion areas due to the longer flow paths in the unsaturated and saturated zones. A comparison of the model estimated and observed mass flux in the Portneuf River is shown in Figure 5-3.

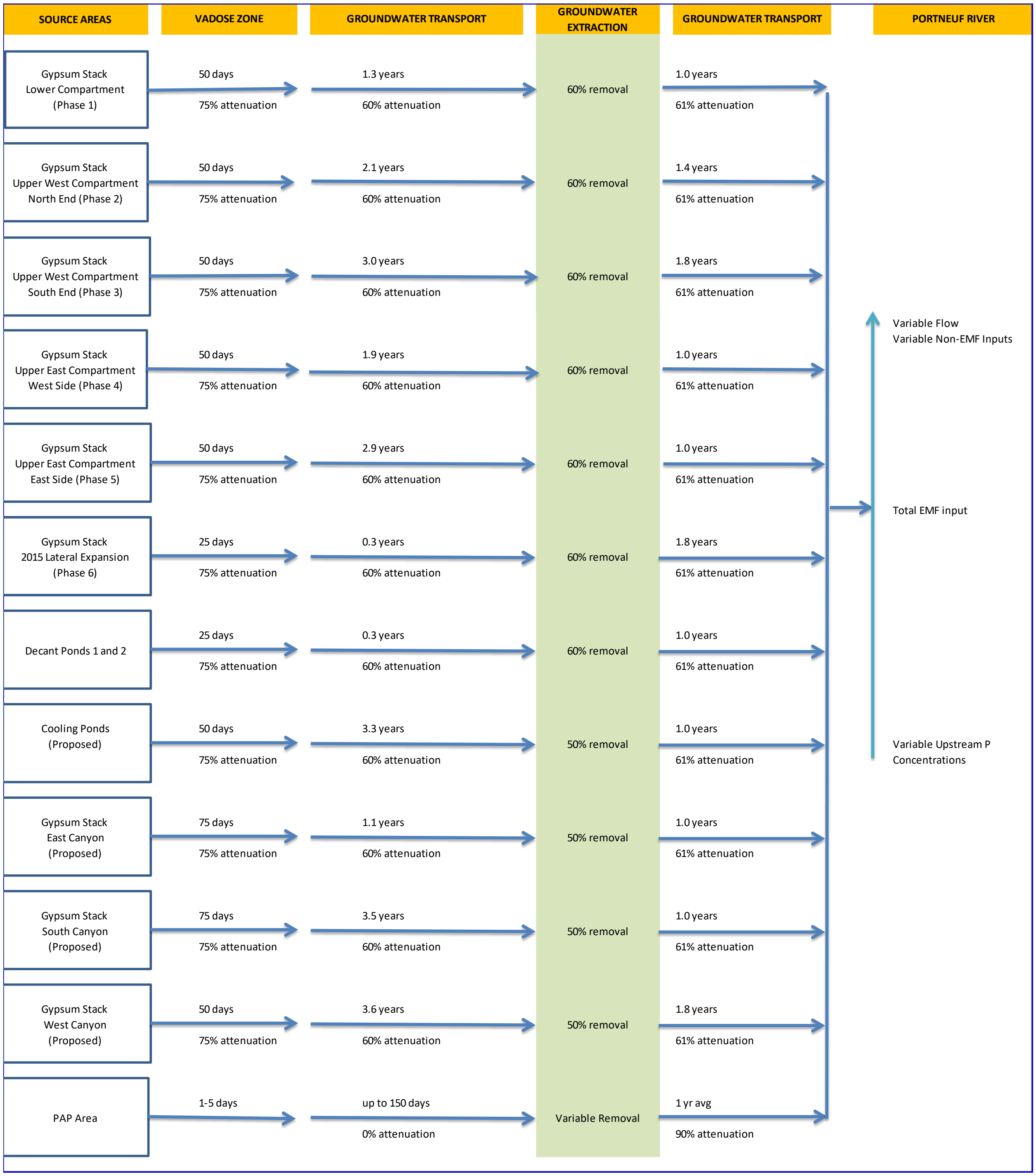


Figure 5-2. Conceptual Site Model including proposed expansion areas

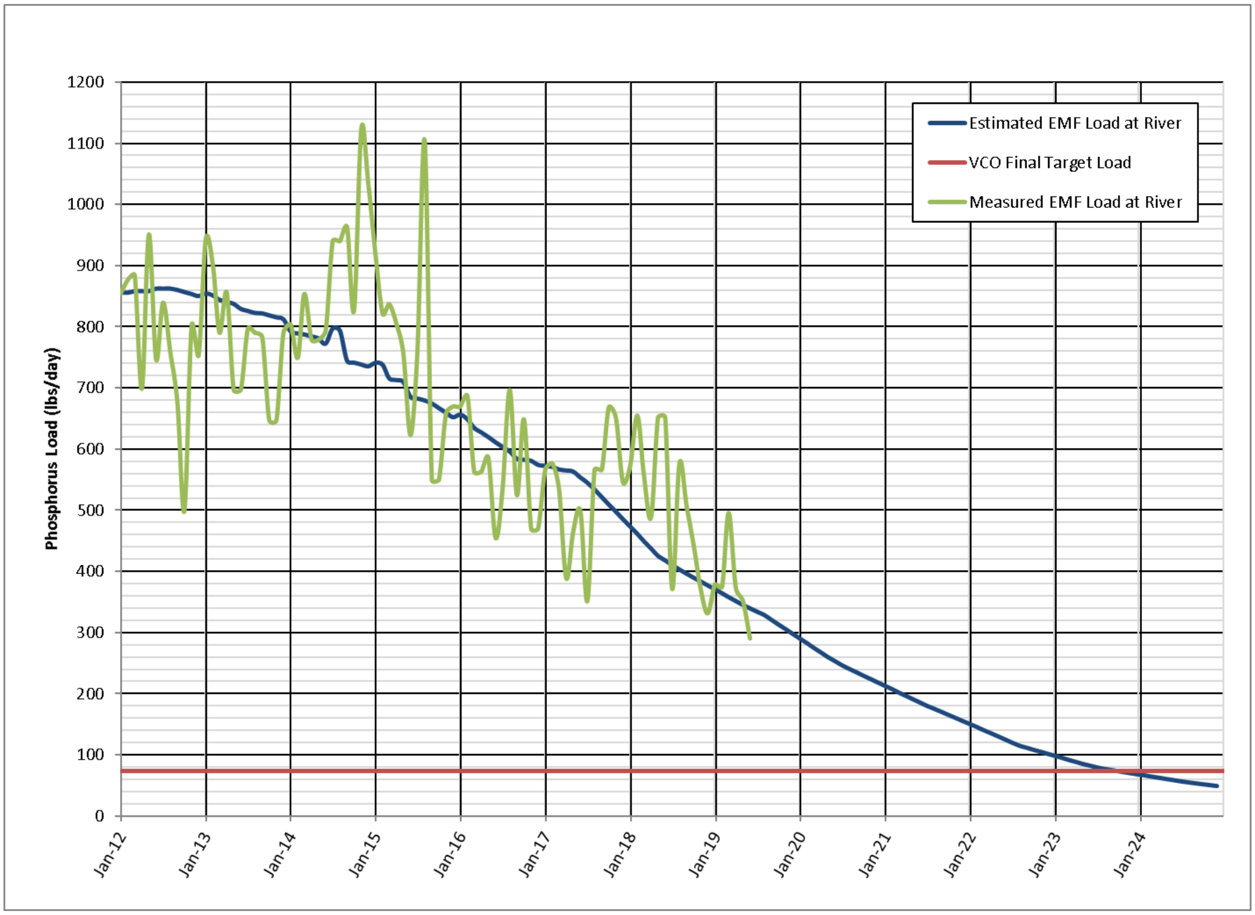


Figure 5-3. Estimated and measured phosphorus mass flux in the Portneuf River since 2012

The mass flux in groundwater is calculated at the target capture zones so that the load removed by groundwater extraction can be subtracted prior to making calculations for transport to the river. A summary of the predicted phosphorus mass flux at the target capture zones is shown in Figure 5-4. As depicted in Figure 5-5, potential leakage from the gypsum stack expansion areas will primarily influence groundwater passing the target capture zones in the eastern and western portions of the facility. Individual wells along the flow paths in these key areas were selected for evaluation of concentration trends over time. Extraction wells are preferable because the concentration is representative of a larger portion of the flow path than at an individual monitoring well. Groundwater extraction well 401 is positioned to monitor both the effect of the drain down of the Phase 2 and 3 lining projects in the West Plant Area and the potential effects of leakage from the West Canyon gypsum stack expansion. Extraction wells 413 and 421 are well positioned to monitor effect of the drain down of the Phases 1, 4, and 5 lining projects in the East Plant Area and the potential effects of leakage from the South and East Canyon gypsum stack expansions and the proposed Cooling Ponds (note that the figure shows the general area of the ponds; a total disturbance area of 100 acres was assumed, but the actual wetted acreage of the pond was assumed at 70 acres.). It is noted that the effectiveness of the remedy is monitored in groundwater in the Compliance Area (groundwater adjacent to the Portneuf River), but evaluating the groundwater at the target capture zones is consistent with the modeling approach and provides worst case estimates of concentration changes (i.e., before the significant dilution that occurs between Highway 30 and the river).

Recent trends for phosphorus and arsenic in groundwater samples collected from well 401 in the West Plant Area are shown in Figure 3-6 and trends for wells 413 and 421 in the East Plant Area are shown in Figure 3-5. A tabular summary is provided in Table 5-1. Both sets of charts show that there are decreasing concentrations of arsenic and phosphorus in each respective region, with decreasing trends beginning at slightly different times due to the timing of the lining projects and travel times from the stack to the wells.

To provide predictions of the concentrations in groundwater in each region in the future, the total loading decline curve (Figure 5-4) can be split to obtain the incremental load decline from the combination of the Phases 2 and 3 lining projects which influences the West Plant Area, and the load decline from the combination of the Phases 1, 4 and 5 lining projects which influences the East Plant Area. These separate curves are shown in Figure 5-6 in terms of percent decline relative to the beginning of 2019. Per the modeling assumptions, future concentrations were estimated by multiplying current concentrations by the predicted reduction in phosphorus mass flux over time. It was further assumed that arsenic load would reduce at the same proportional rate as phosphorus. Predicted arsenic and phosphorus concentrations in groundwater in the wells in the East Plant and West Plant areas over time are shown in Figure 5-7 and Figure 5-8 respectively and in Table 5-2. As shown the concentrations initial decline is related to the Phase 1 through 5 lining projects and the effect of gypsum stack draindown and is essentially complete by 2037 in the West Plant Area and by 2039 in the East Plant Area. Concentrations then plateau in response to leakage through the liner through the remainder of the operating period (2085). Concentrations then resume declining eventually reaching the background levels assumed for the calculation (0.004 mg/L arsenic and 0.08 mg/L phosphorus) for groundwater emanating from the Bannock Range by about 2140. The background values used were calculated during the remedial design (Formation 2010a; p.111). IDEQ uses a lower value for the phosphorus background (0.02 mg/L) for regional groundwater north of the facility.

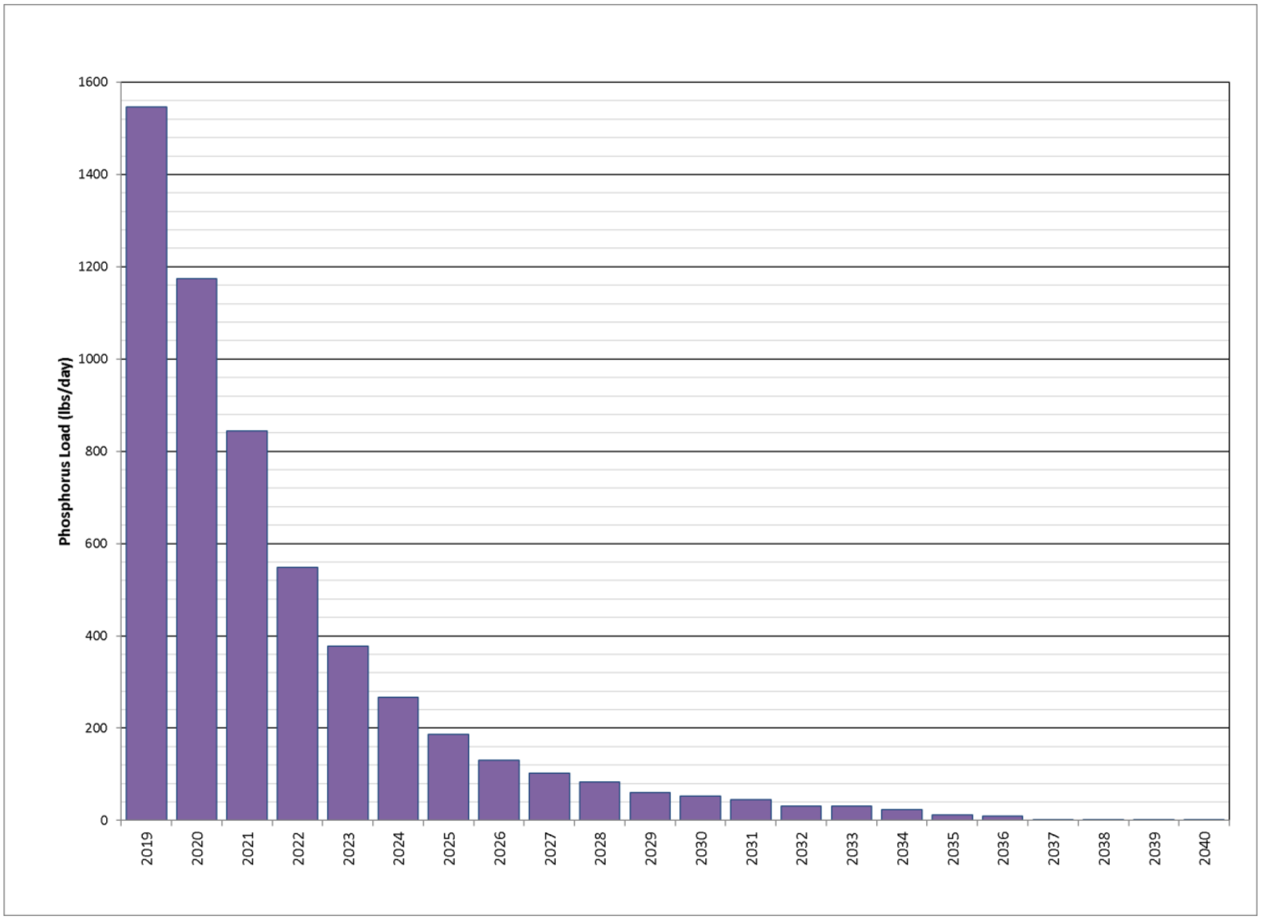


Figure 5-4. Predicted total phosphorus mass flux in groundwater for all the target capture zones (TCZ)

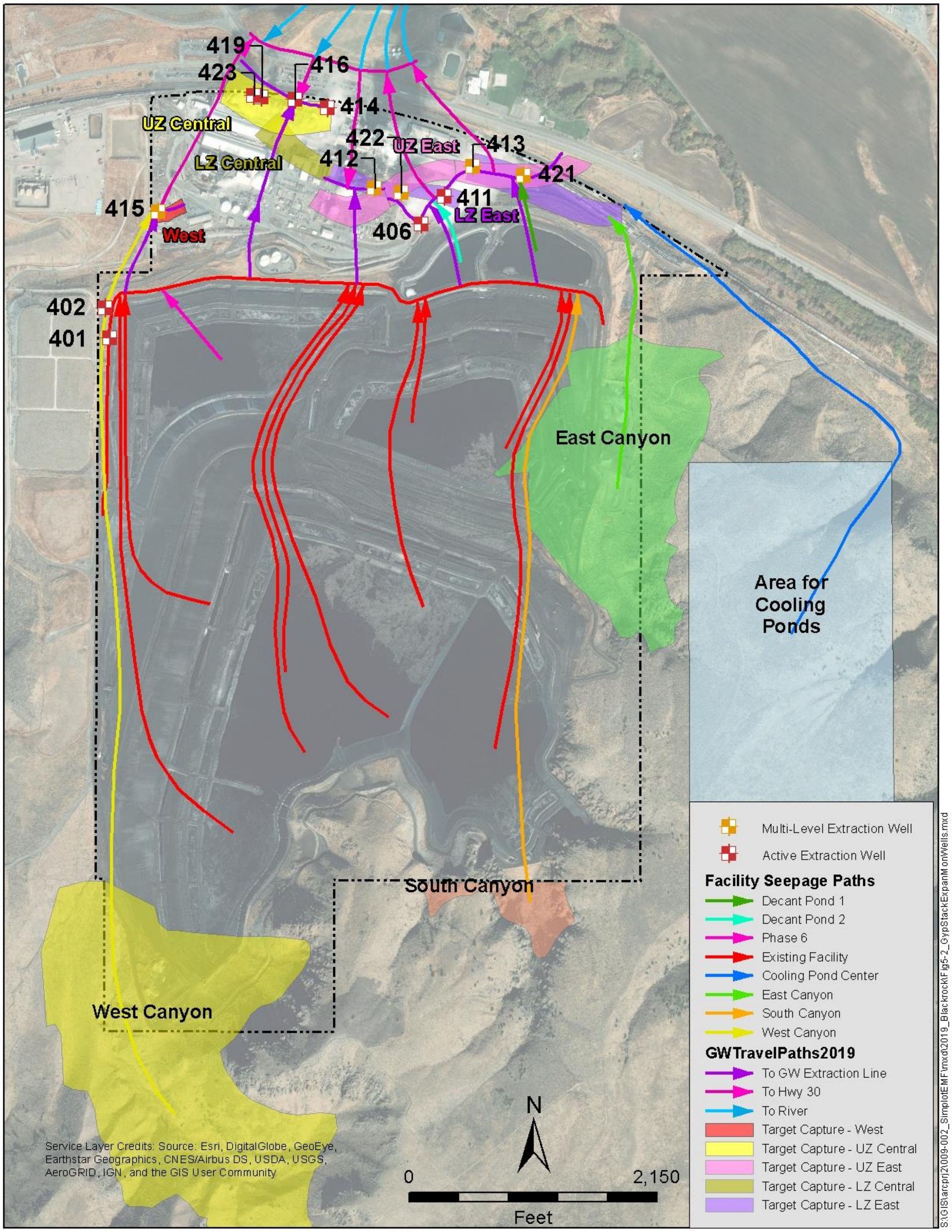


Figure 5-5. Groundwater flow paths, target capture zones and active extraction wells

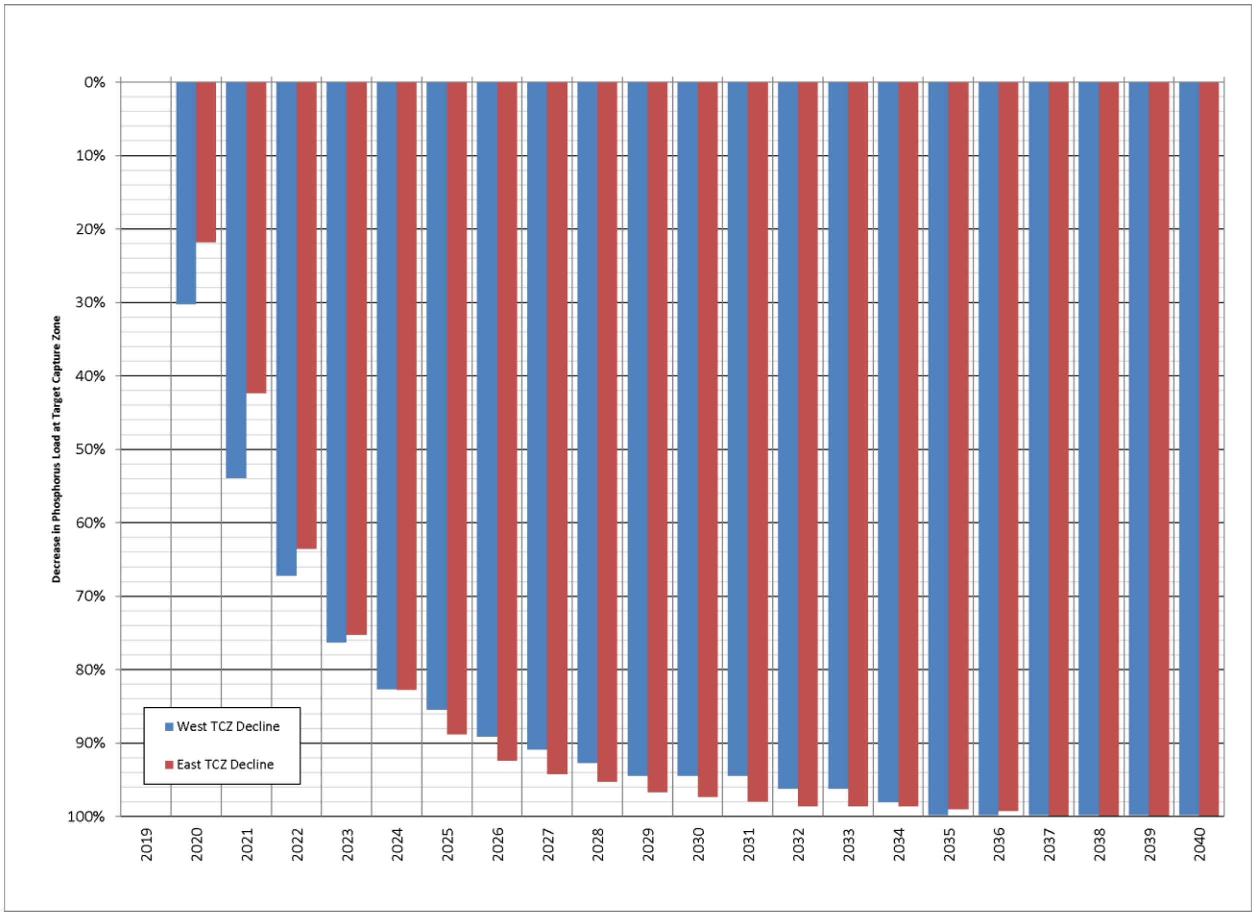


Figure 5-6. Predicted decrease in phosphorus mass flux in groundwater in the East Plant and West Plant areas Target Capture Zones

Table 5-1. Predicted phosphorus mass flux in groundwater in the East Plant and West Plant areas Target Capture Zones.

Load Arrival Date	West Target Capture Zones		East Target Capture Zones	
	Mass Flux (lbs/day)	Decline from 2019	Mass Flux (lbs/day)	Decline from 2019
2019	408.2	0%	1146.1	0%
2020	284.5	30%	898.0	22%
2021	187.9	54%	664.0	42%
2022	133.9	67%	422.2	63%
2023	96.7	76%	288.8	75%
2024	70.5	83%	204.1	82%
2025	59.3	85%	135.1	88%
2026	44.4	89%	94.1	92%
2027	37.1	91%	73.4	94%
2028	29.9	93%	61.5	95%
2029	22.6	94%	45.4	96%
2030	22.6	94%	38.1	97%
2031	22.6	94%	30.9	97%
2032	15.3	96%	23.6	98%
2033	15.3	96%	23.6	98%
2034	8.0	98%	23.6	98%
2035	0.8	99.8%	13.3	98.8%
2036	0.8	99.8%	10.4	99.1%
2037	0.8	99.8%	3.1	99.7%
2038	0.8	99.8%	3.1	99.7%
2039	0.8	99.8%	3.1	99.7%
2040	0.8	99.8%	3.1	99.7%
2050	0.8	99.8%	3.1	99.7%
2060	0.8	99.8%	3.1	99.7%
2070	0.8	99.8%	3.1	99.7%
2080	0.8	99.8%	3.1	99.7%
2090	0.6	99.8%	1.1	99.9%
2100	0.2	99.95%	0.4	99.97%
2110	0.1	99.98%	0.2	99.98%
2120	0.1	99.99%	0.1	99.99%
2130	0.0	99.99%	0.1	99.99%
2140	0.0	100.00%	0.0	100.00%

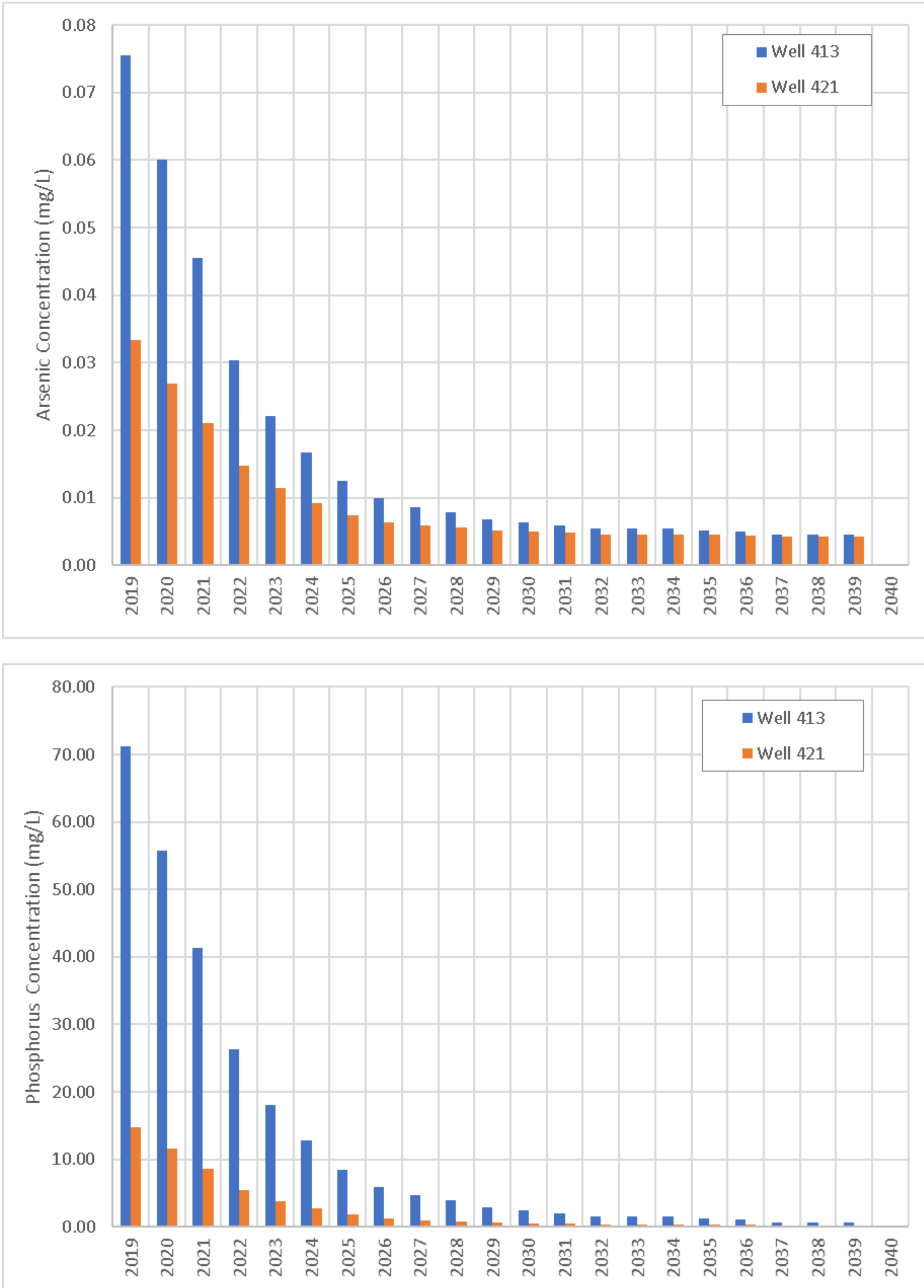
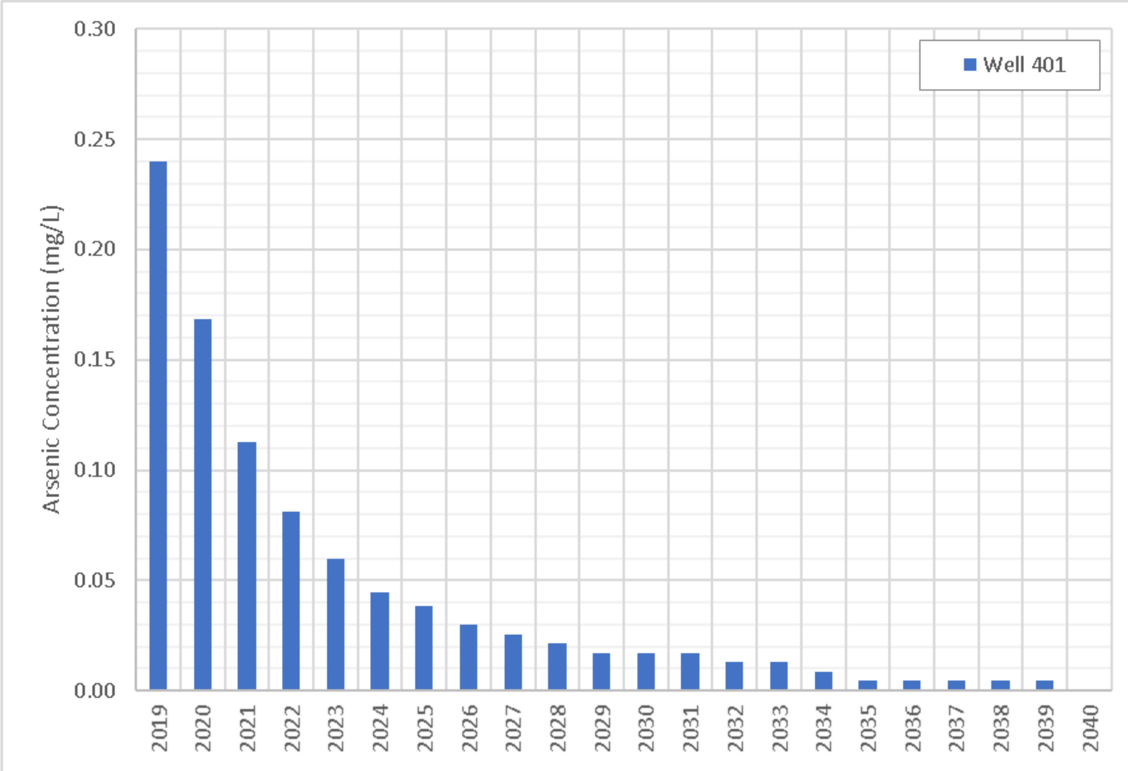


Figure 5-7. Predicted arsenic and phosphorus concentrations in groundwater at wells 413 and 421 in the East Plant Area



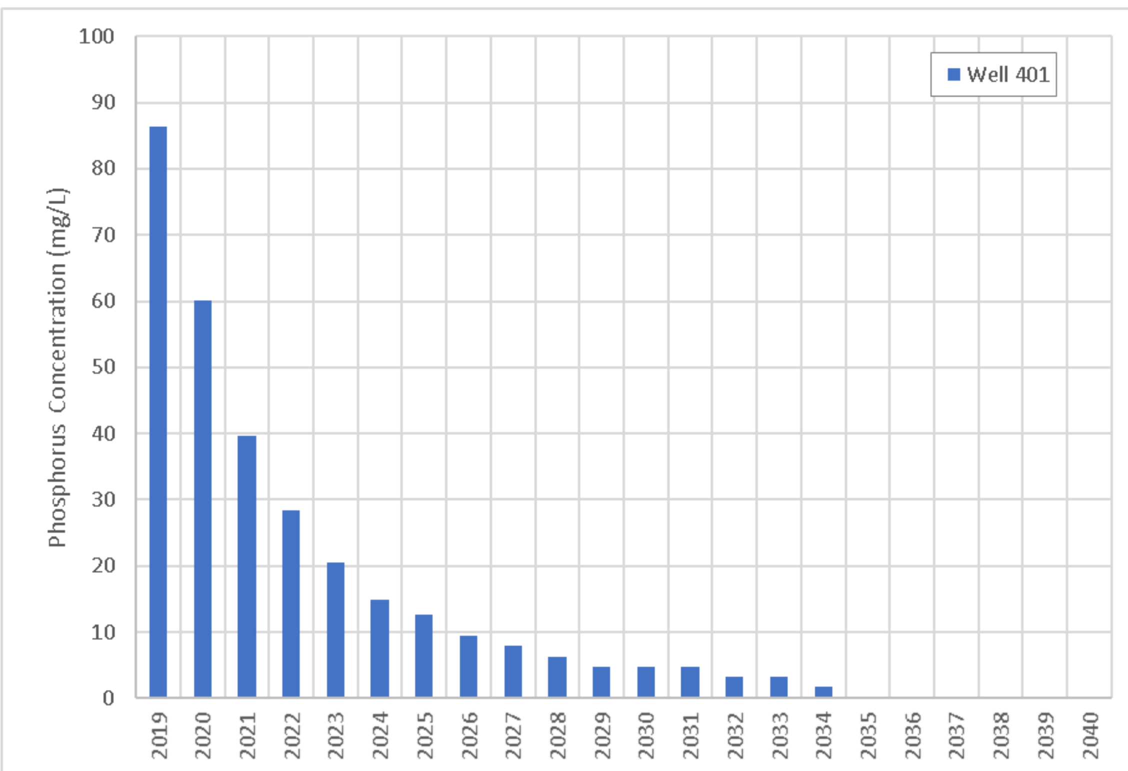


Figure 5-8. Predicted arsenic and phosphorus concentrations in groundwater at well 401 in the West Plant Area

Table 5-2. Predicted arsenic and phosphorus concentrations at well 401 in the West Plant Area and wells 413 and 421 in the East Plant Area.

Date	401 (mg/L)		413 (mg/L)		421 (mg/L)	
	Arsenic	Phosphorus	Arsenic	Phosphorus	Arsenic	Phosphorus
2019	0.240	86.40	0.076	71.20	0.033	14.80
2020	0.168	60.24	0.060	55.80	0.027	11.61
2021	0.113	39.82	0.045	41.29	0.021	8.61
2022	0.081	28.40	0.030	26.28	0.015	5.50
2023	0.060	20.52	0.022	18.00	0.011	3.79
2024	0.045	15.00	0.017	12.75	0.009	2.70
2025	0.038	12.63	0.012	8.46	0.007	1.81
2026	0.030	9.47	0.010	5.92	0.006	1.29
2027	0.025	7.93	0.009	4.63	0.006	1.02
2028	0.021	6.39	0.008	3.90	0.006	0.87
2029	0.017	4.86	0.007	2.90	0.005	0.66
2030	0.017	4.86	0.006	2.45	0.005	0.57
2031	0.017	4.86	0.006	2.00	0.005	0.48
2032	0.013	3.32	0.005	1.55	0.005	0.38
2033	0.013	3.32	0.005	1.55	0.005	0.38
2034	0.009	1.78	0.005	1.55	0.005	0.38
2035	0.004	0.24	0.005	1.28	0.004	0.33
2036	0.004	0.24	0.005	1.10	0.004	0.29
2037	0.004	0.24	0.005	0.65	0.004	0.20
2038	0.004	0.24	0.005	0.65	0.004	0.20
2039	0.004	0.24	0.005	0.65	0.004	0.20
2040	0.004	0.24	0.004	0.28	0.004	0.12
2050	0.004	0.24	0.004	0.28	0.004	0.12
2060	0.004	0.24	0.004	0.28	0.004	0.12
2070	0.004	0.24	0.004	0.28	0.004	0.12
2080	0.004	0.24	0.004	0.28	0.004	0.12
2090	0.004	0.20	0.004	0.15	0.004	0.09
2100	0.004	0.13	0.004	0.10	0.004	0.09
2110	0.004	0.10	0.004	0.09	0.004	0.08
2120	0.004	0.09	0.004	0.09	0.004	0.08
2130	0.004	0.09	0.004	0.09	0.004	0.08
2140	0.004	0.08	0.004	0.08	0.004	0.08

The model described in Section 4 was used to estimate average annual phosphorus concentrations in the Portneuf River. The results are shown in Figure 5-9. As shown, concentrations are predicted to decline to the long-term average of about 0.09 mg/L by about 2030. In the concentration calculation, phosphorus loading to the river is assumed to be constant from upstream sources as measured at Batiste Road (188 lbs/day), from the Pocatello POTW (16 lbs/day) and in background groundwater contribution (27 lbs/day). These non-Simplot inputs result in an average phosphorus concentration in the river of 0.09 mg/L. As shown in Table 5-3 the contribution from the EMF Site is predicted to be less than a pound per day by 2039. In the analysis, it was assumed that the groundwater extraction system will be turned off in 2025 (note that this is an assumption for the model; the decision on groundwater extraction will be made by EPA in the future considering the available data and the requirements and

goals under CERCLA).This approach does not consider the seasonal effect of the main other source of phosphorus to the Lower Portneuf River; erosion of soils in the upstream watershed.

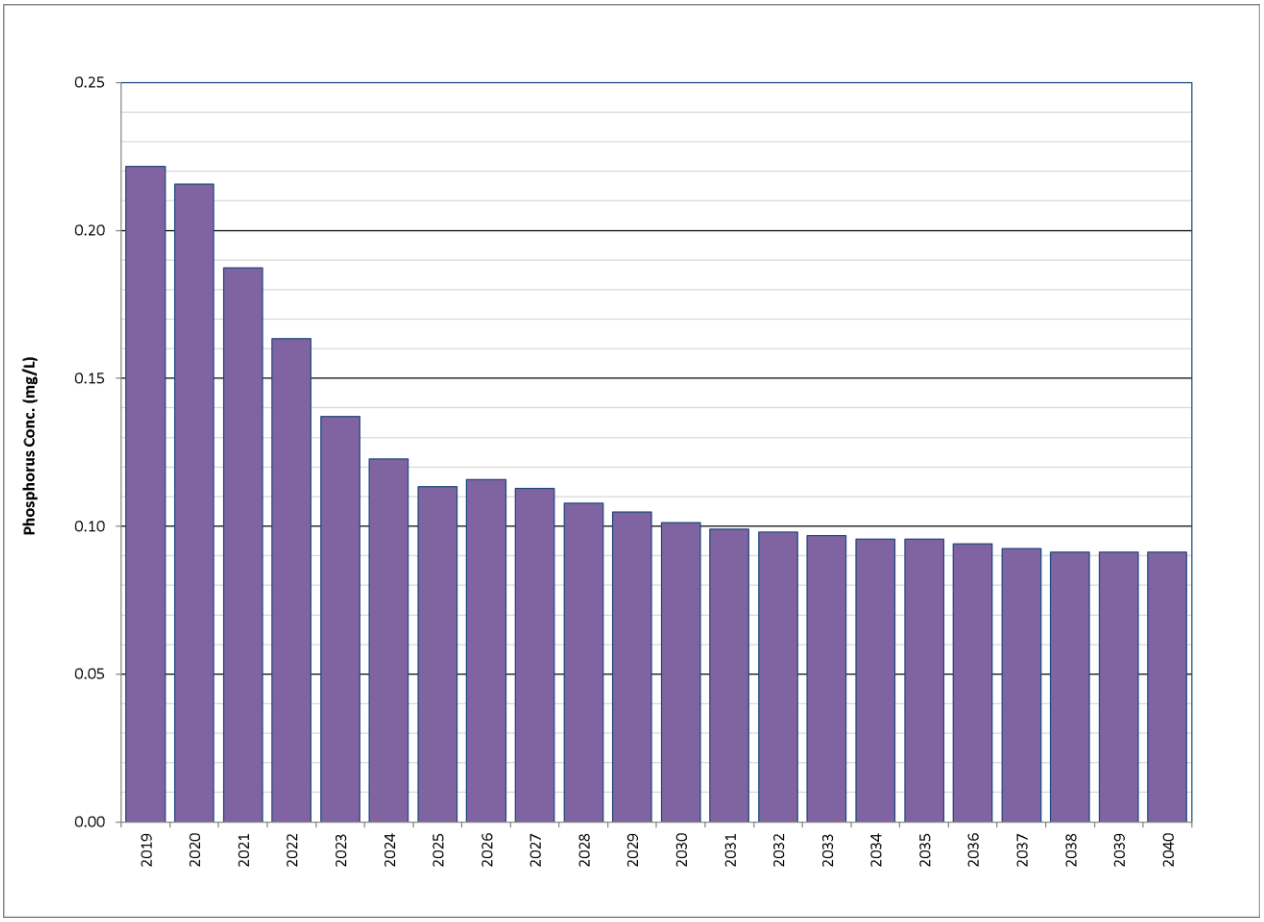


Figure 5-9. Predicted average annual phosphorus concentrations in the Portneuf River at Siphon Road

Table 5-3. Predicted phosphorus mass flux to the Portneuf River and calculated concentrations in the river at Siphon Road.

Date at River	Total EMF Phosphorus Mass Flux Entering River (lbs/day)	Concentration in River at Siphon Road (mg/L)
2019	332	0.222
2020	317	0.216
2021	245	0.187
2022	185	0.164
2023	117	0.137
2024	81	0.123
2025	57	0.113
2026	63	0.116
2027	55	0.113
2028	43	0.108
2029	36	0.105
2030	26	0.101
2031	21	0.099
2032	17.9	0.098
2033	15.1	0.097
2034	12.2	0.096
2035	12.2	0.096
2036	7.7	0.094
2037	3.7	0.092
2038	0.9	0.091
2039	0.91	0.091
2040	0.91	0.091

5.3 Modeling and Assessment of Incremental Contributions Resulting from Proposed Facility Expansion

Incremental effects of the proposed expansion on COC concentrations were evaluated using the same set of parameters that were used in the model to simulate transport in groundwater along the pathway to the Portneuf River. While the previous model was primarily a tool for understanding the effects of the draindown of the portion of the existing gypsum stack beneath what is now lined, it is easily modified to include leakage through a liner at the proposed expansion features.

The maximum leakage rate through a liner beneath a gypsum stack was estimated by Ardaman and Associates (2009) less than 0.010 inches/year (in/year) (0.0005 gpm/acre). This represents the maximum leakage that would occur in the early period of operation. As the stack grows the gypsum compresses and compacts, reducing its permeability and consequently reducing the leakage through the liner. In the modeling, it was assumed that the leakage remained at the maximum value throughout the period of operation. These leakage rates are relatively low compared with liners for landfills. This is primarily due to the fact that the liner is 60-mil HDPE covered with over-consolidated gypsum that has extremely low hydraulic conductivity values (on the order of 10E-8 cm/sec). The sedimented gypsum “plugs” the imperfections in the synthetic liner. The leakage rate through a clay-geomembrane composite liner for a

pond was estimated to be 0.03 in/yr or 0.0015 gpm/acre (with the pond to be operated at a maximum water depth of 10 feet). Based on estimated lined areas and measured COC concentration in the decant water, the maximum leakage load for phosphorus and arsenic from each expansion area can be calculated, as presented in Table 5-4.

Table 5-4. Summary of maximum phosphorus and arsenic leakage loads to groundwater from proposed expansion areas.

Expansion	Area (ac)	Leakage Rate (gpm)	Phosphorus			Arsenic		
			Conc (mg/L)	*Leakage Load (lbs/day)*	*Load at TCZ (lbs/day)*	*Conc (mg/L)*	*Leakage Load (lbs/day)*	*Load at TCZ (lbs/day)*
East Canyon	68.2	0.035	3,928	1.66	0.17	0.438	0.000185	0.000019
South Canyon	8.7	0.004	3,928	0.21	0.021	0.438	0.000024	0.000002
West Canyon	129.0	0.067	3,928	3.14	0.31	0.438	0.000351	0.000035
Cooling Ponds	70[1]	0.108	3,928	5.12	0.51	0.438	0.0006	0.00006

[1] The total disturbance area is 100 acres, but 70 acres represents the wetted acreage of the pond(s).

A summary of the estimated flows from leakage and current groundwater flows in the target capture zones is shown in Table 5-5. As shown, leakage is a small fraction of the current groundwater flow and therefore it will not affect groundwater flow paths, rates, etc.

Table 5-5. Estimated Leakage and Groundwater Flows.

Target Capture Zone (TCZ)	TCZ Groundwater Flow Rate (gpm)	Expansion Area (EA)	Expansion Area Leakage Rate (gpm)
East Plant	196	East Canyon	0.035
		Cooling Ponds	0.108
		South Canyon	0.004
West Plant	158	West Canyon	0.067

5.3.1 Maximum Incremental Increase in COC Concentrations in Groundwater

An estimate of the maximum incremental increase in the concentration of COCs in groundwater in the target capture zones can be made by using data from the period when the gypsum stack was unlined, along with leakage load and groundwater flow rates.

Groundwater samples in the wells downgradient of the gypsum stack are normally only analyzed for indicator analytes but were analyzed for an expanded analyte list in the second quarter 2008 sampling event, prior to any lining of the gypsum stack. COC concentrations in the process water on the stack are available from the RI Report (Bechtel 1996). A dilution and attenuation factor (DAF) along each of the potential pathways was determined by comparing the concentration in the process water to the concentration in groundwater in a representative well located downgradient. The DAF is calculated as:

$$DAF = \frac{\text{concentration of a constituent in the gypsum stack process water}}{\text{concentration of the constituent in groundwater}}$$

The greater the DAF the more attenuation occurs for a COC as it is transported from the gypsum stack surface to groundwater.

The same wells that were used in the evaluation of the ongoing operations (Section 5.2) can be used for the DAF calculation. COC concentrations from the 2008 sampling event for well 401 are used to calculate the DAF in the West Plant Area along the potential pathway from the West Canyon gypsum stack. Wells 413 and 421 in the East Plant Area had not been installed when the sampling was conducted in 2008 so results from well 332, located about midway between the two wells were used. Results of the DAF calculations are provided in Table 5-6.

Table 5-6. Dilution and attenuation factor of gypsum stack seepage in the groundwater flow path to the West Plant and East Plant areas.

Parameter	Gypsum Slurry Liquid	Well 401	West Plant DAF	Well 332	East Plant DAF
Antimony	0.0892	0.003 U	>30	0.003 U	>30
Arsenic	0.438	0.433	1	0.316	1
Beryllium	0.0199 UJ	0.002 U	NA	0.002 U	NA
Boron	10	1.02	10	0.673	15
Cadmium	2	0.0002 U	>10,000	0.000891	2,245
Chromium	5.31	0.006 U	>885	0.006 U	>885
Fluoride	8,480	0.1 U	>84,800	0.5 U	>16,960
Manganese	1.48	0.461	3	0.105	14
Mercury	0.0002 U	0.0002 U	NA	0.0002 U	NA
Nickel	1.68	0.042	40	0.037	45
Phosphorus, Total	3928	146	26.9	176	22
Selenium	0.0451	0.0154	2.9	0.0105	4.3
Sulfate	4,480	2620	1.7	2770	1.6
Thallium	0.0251 J	0.001 U	>25	0.001	>25
Vanadium	3.81	0.0305	125	0.0234 U	163
Zinc	12.6	0.01 U	>1260	0.0119	1059
Gross alpha	644	0 U	NA	34.9	18
Radium-226 + Radium-228	NR	0.7 U	NA	1.2	NA

Notes:
Gypsum slurry liquid results from Bechtel 1996, except arsenic and phosphorus from Formation 2015.
All concentrations in mg/L except gross alpha and radium in pCi/L.
U = Not detected at specified limit.
J = Estimated value
NA = value cannot be calculated.
NR = no result provided

The DAF values in Table 5-6 are applicable to the seepage of the unlined gypsum stack facility and must be adjusted for use in the expansion areas which will be lined and have much lower leakage rates. As described in the previous section, the seepage is divided by lining phase with seepage from Phases 1, 4 and 5 reporting to the East Plant Area and Phases 2 and 3 reporting to the West Plant Area. Unlined seepage rates for each area were estimated at 580 gpm and 325 gpm, respectively (Formation 2015b). Using the leakage rates for the expansion areas in Table 5-4, the DAF for the West Plant Area relative to the West Canyon expansion must be adjusted by a factor of 4,880 (325 gpm/0.067 gpm), and the DAF

for the East Plant Area must be adjusted by 3,927 (580 gpm/0.148 gpm) relative to the combination of the East Canyon, South Canyon and Cooling Pond expansion areas. The maximum increase in COC concentrations in groundwater at the location of wells 401 and 332 can be calculated using the adjusted DAFs and are provided in Table 5-7 and Table 5-8.

Table 5-7. Calculated contribution to concentration of COCs in groundwater from the proposed expansion features in the West Plant Area.

Parameter	Gypsum Slurry Liquid[1]	DAF for West Plant Area Expansion Areas	Contribution to COC Concentration from West Plant Area Expansion Areas [1]	MCL/RBC[2]	% of MCL/RBC
Antimony	0.0892	NA	NA	0.006	NA
Arsenic	0.438	4,936	0.00009	0.01	0.89%
Beryllium	0.0199 UJ	NA	NA	0.004	NA
Boron	10	47,839	0.0002	1.36	0.015%
Cadmium	2	48,796,208	0.00000004	0.005	0.001%
Chromium	5.31	4,318,464	0.000001	0.1	0.001%
Fluoride	8,480	413,791,846	0.00002	4	0.001%
Manganese	1.48	15,666	0.00009	0.077	0.123%
Mercury	0.0002 U	NA	NA	0.002	NA
Nickel	1.68	195,185	0.000009	0.299	0.003%
Phosphorus, Total	3928	131,282	0.030	NA	NA
Selenium	0.0451	14,290	0.000003	0.05	0.006%
Sulfate	4,480	8,344	0.54	250	0.215%
Thallium	0.0251 J	121,991	0.00000021	0.002	0.010%
Vanadium	3.81	609,553	0.000006	0.108	0.006%
Zinc	12.6	6,148,322	0.000002	3.93	0.000%
Gross alpha	644	NA	NA	15	NA
Radium-226 + Radium-228	NR	NA	NA	5	NA

Notes:
[1] - All concentrations in mg/L except gross alpha and radium in pCi/L.
[2] – Cleanup Levels from the ROD – MCL (if there is one) or Risk-Based Concentration, if not.
Sulfate is a secondary MCL and included for information only.
U = Not detected at specified limit.
J = Estimated value
NA = value cannot be calculated.
NR = no result provided

Table 5-8. Calculated contribution to concentration of COCs in groundwater from the proposed expansion features in the East Plant Area.

Parameter	Gypsum Slurry Liquid [1]	DAF for East Plant Area Expansion Areas	Contribution to COC Concentration from East Plant Area Expansion Areas [1]	MCL/RBC[2]	% of MCL/RBC
Antimony	0.0892	117,810	0.00000076	0.006	0.01%
Arsenic	0.438	5,443	0.00008	0.01	0.8%
Beryllium	0.0199 UJ	NA	NA	0.004	NA
Boron	10	58,351	0.00017	1.36	0.01%

Parameter	Gypsum Slurry Liquid [1]	DAF for East Plant Area Expansion Areas	Contribution to COC Concentration from East Plant Area Expansion Areas [1]	MCL/RBC[2]	% of MCL/RBC
Cadmium	2	8,814,819	0.00000023	0.005	0.005%
Chromium	5.31	3,475,396	0.0000015	0.1	0.002%
Fluoride	8,480	66,601,948	0.00013	4	0.003%
Manganese	1.48	55,352	0.000027	0.077	0.03%
Mercury	0.0002 U	NA	NA	0.002	NA
Nickel	1.68	178,307	0.0000094	0.299	0.003%
Phosphorus, Total	3,928	87,664	0.045	NA	NA
Selenium	0.0451	16,867	0.0000027	0.05	0.01%
Sulfate	4,480	6,351	0.71	250	0.28%
Thallium	0.0251 J	98,175	0.00000026	0.002	0.01%
Vanadium	3.81	639,396	0.000006	0.108	0.01%
Zinc	12.6	4,158,002	0.000003	3.92	0.0001%
Gross alpha	644	72,464	0.0089	15	0.06%
Radium-226 + Radium-228	NR	NA	NA	5	NA

Notes:
1 - All concentrations in mg/L except gross alpha and radium in pCi/L.
2 – Cleanup Levels from the ROD – MCL (if there is one) or Risk-Based Concentration, if not.
Sulfate is a secondary MCL and included for information only.
U = Not detected at specified limit.
J = Estimated value
NA = value cannot be calculated.
NR = no result provided

5.3.2 Temporal Changes – Phosphorus Concentrations in Portneuf River

In order to estimate temporal effects on groundwater and surface water quality additional assumptions must be made regarding the timing and duration of operations. For the purposes of these calculations, an operating scenario that provides a conservative estimate of leakage from the existing and proposed expansion areas was adopted. In this scenario, all gypsum stack compartments are assumed to be in concurrent use until stack closure. The operational life of the gypsum stack is assumed to extend 65 years to 2084 with expansion areas starting operation incrementally as provided in Table 5-9. Note that this is the current estimate; the actual life of the stack will depend on many factors during its operation which are not feasible to fully quantify at this time, including facility production rates, compression and compaction of the gypsum and final stack geometry. Gypsum stack expansion areas are proposed earlier than the expected end life of the current stack. Once operations cease, leakage through the liner is assumed to reduce exponentially for 50 years. The Cooling Ponds are assumed to start operation in 2025 in order to meet the requirements of the Consent Order. On closure, leakage from the ponds is assumed to immediately cease with effects at the target capture zones and river delayed based on groundwater travel time.

Table 5-9 Operational life of expansion areas.

Expansion Area	Date in Service	Date out of Service
East Canyon	10/1/2025	10/1/2084
South Canyon	10/1/2025	10/1/2084
West Canyon	10/1/2040	10/1/2084
Cooling Ponds	1/1/2025	10/1/2084

Based on this scenario, the incremental phosphorus mass load in groundwater at the target capture zones and discharging to the Portneuf River due to the expansion can be estimated over time using estimates of groundwater flow velocity and attenuation. The predicted total incremental phosphorus mass load at the target capture zones is shown in Figure 5-10 and the load to the Portneuf River is shown in Figure 5-11. The predicted incremental increase in the concentration in the river at Siphon Road is shown in Figure 5-12. Predicted loading from the expansion areas increases the concentration in the river at Siphon Road by a maximum 0.00016 mg/L; this is 0.2% of the 0.07 mg/L VCO/CA target concentration. Assuming the cessation of operations in 2084, residual loading to the river from the expansion areas is predicted to end by 2130.

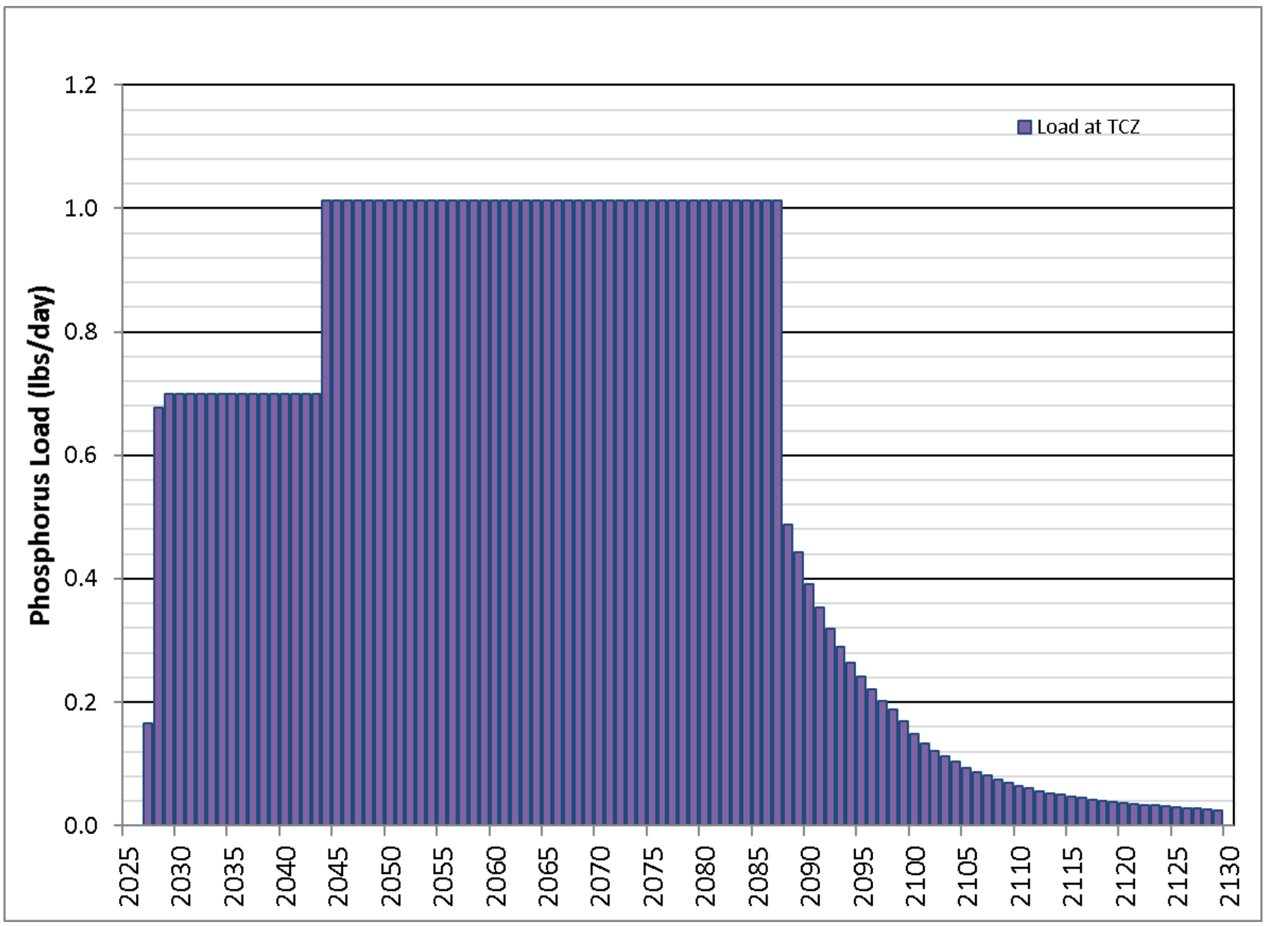


Figure 5-10. Predicted phosphorus mass flux in groundwater at the target capture zone from the expansion areas

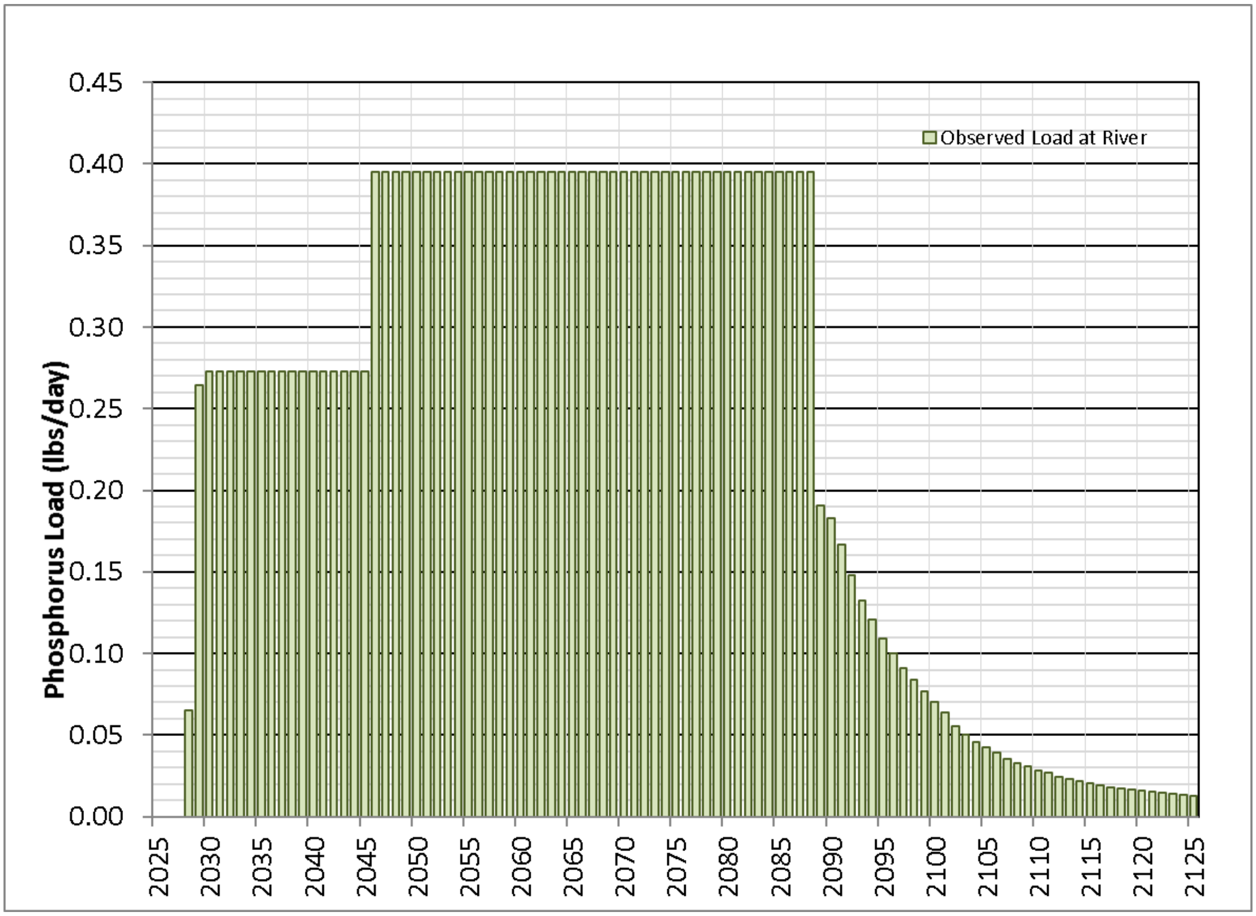


Figure 5-11. Predicted phosphorus loading to the Portneuf River from the expansion areas

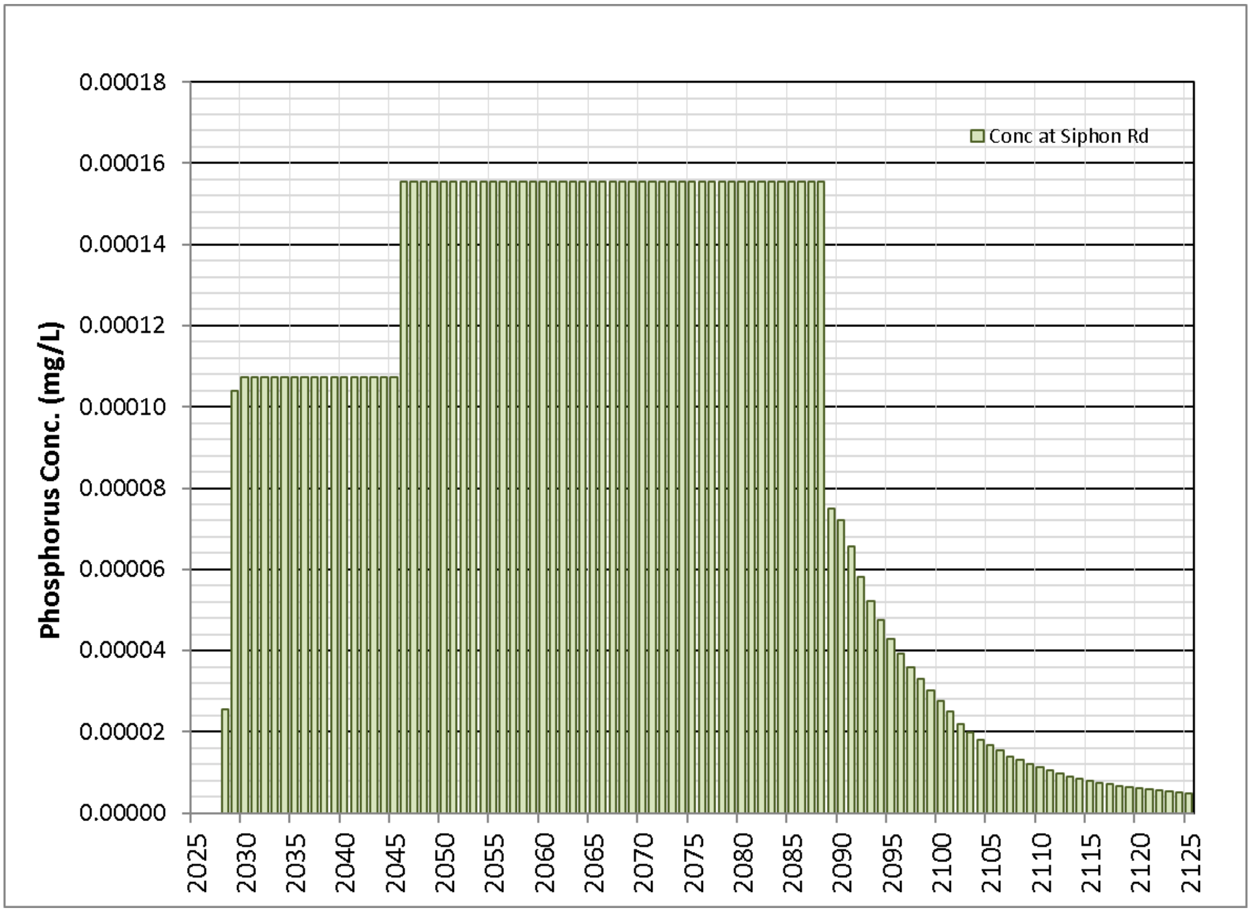


Figure 5-12. Predicted incremental increase in annual average phosphorus concentrations in the Portneuf River at Siphon Road from the expansion areas

5.3.3 Temporal Changes – Arsenic and Phosphorus in Groundwater

To provide predictions of the incremental increase in the concentrations of COCs in groundwater downgradient of the expansion areas the predicted total phosphorus load at the target capture zones (Figure 5-10) is used to provide an expression for relative change in concentrations in groundwater. The total phosphorus load to the target capture zones can be split to obtain the incremental load from the West Canyon gypsum stack expansion, which influences the West Plant Area, and the incremental load from the combination of the East Canyon and South Canyon gypsum stack expansions and the proposed Cooling Ponds, which influences the East Plant Area. The separate loads are shown in Figure 5-13 in terms of percent relative to the maximum predicted phosphorus loading at the target capture zone. Per the modeling assumptions, future concentrations were estimated by multiplying the maximum estimated concentrations in Table 5-5 and Table 5-6 by the predicted phosphorus loading (as a fraction) over time Figure 5-13. It is assumed that the other COC concentrations will decrease at the same proportional rate as phosphorus. Predicted arsenic and phosphorus concentrations in groundwater over time in the wells in the East Plant and West Plant areas are shown in Figure 5-14 and Figure 5-15 respectively and in Table 5-10. As shown, the predicted incremental increase in the concentration of arsenic peaks at less than 9×10^{-5} mg/L in the West Plant and about 8×10^{-5} mg/L in the East Plant area. Predicted concentrations of phosphorus peak at less than 0.03 mg/L in the West Plant area and less than 0.05 mg/L in the East Plant Area.

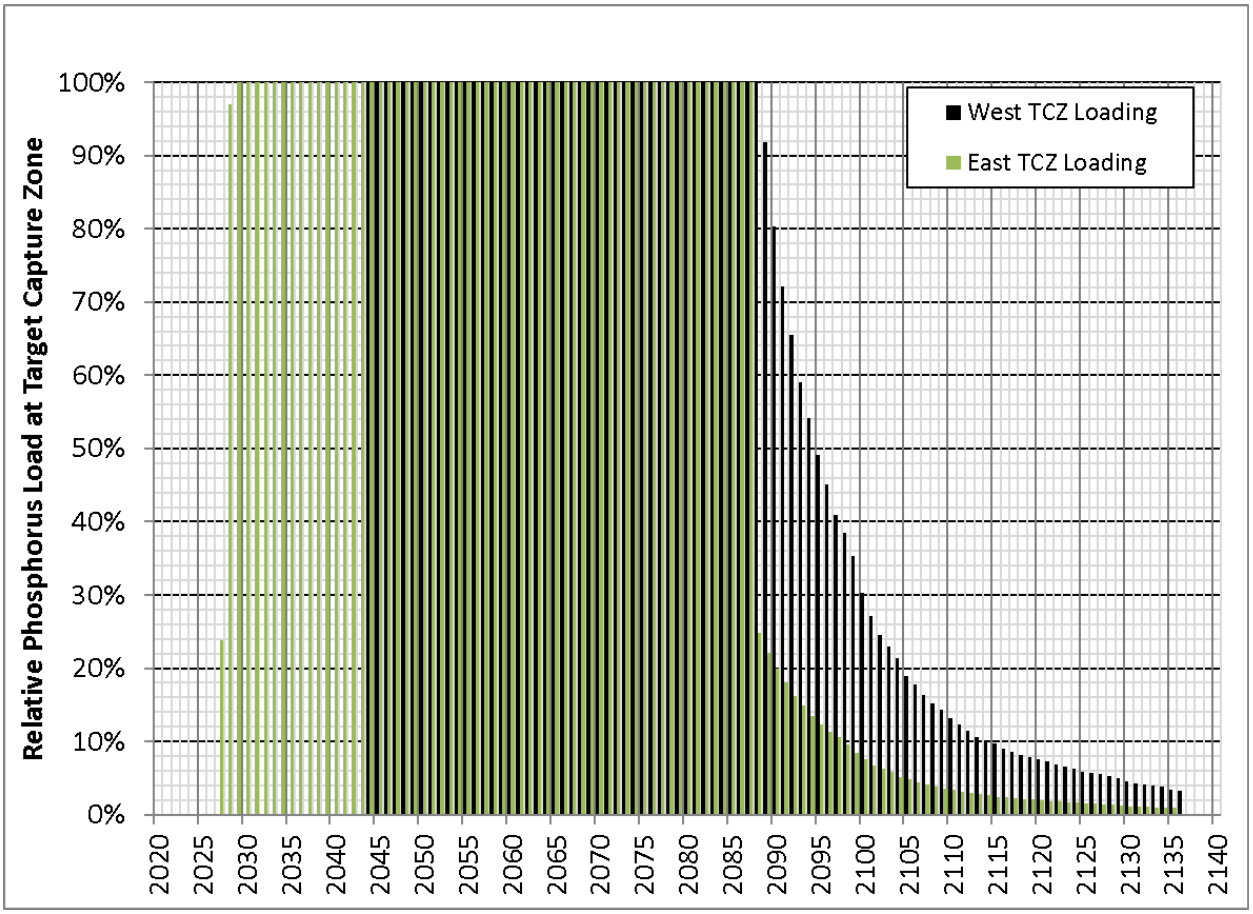
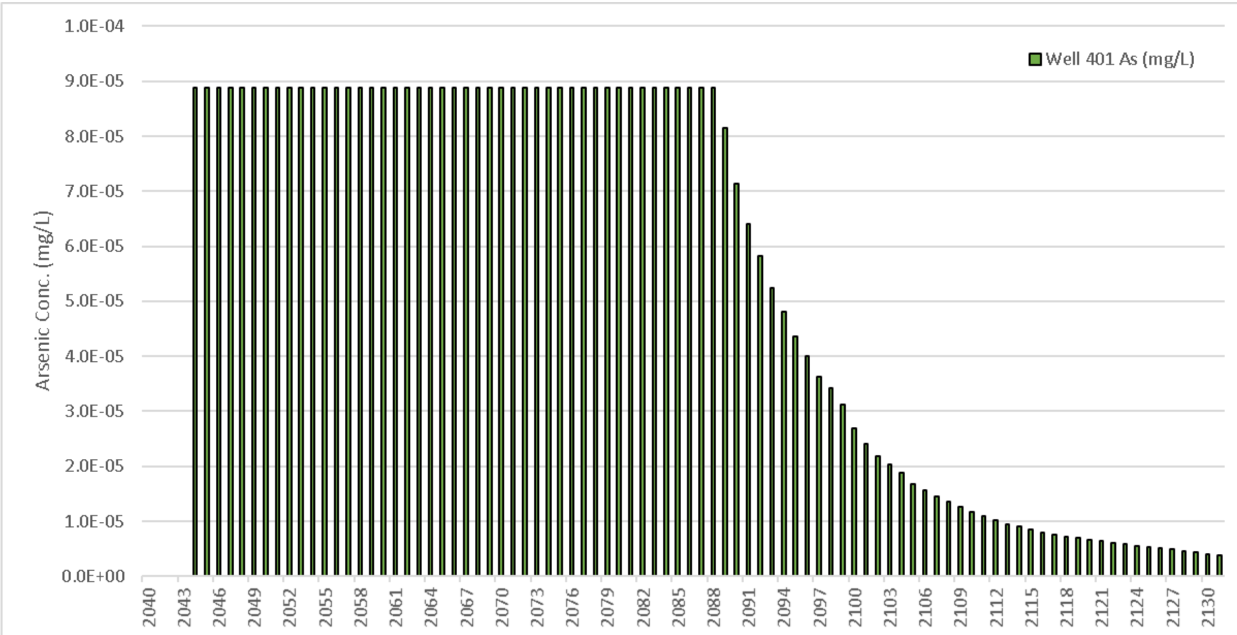


Figure 5-13. Relative percent of total predicted phosphorus mass flux in groundwater at the target capture zones from expansion areas



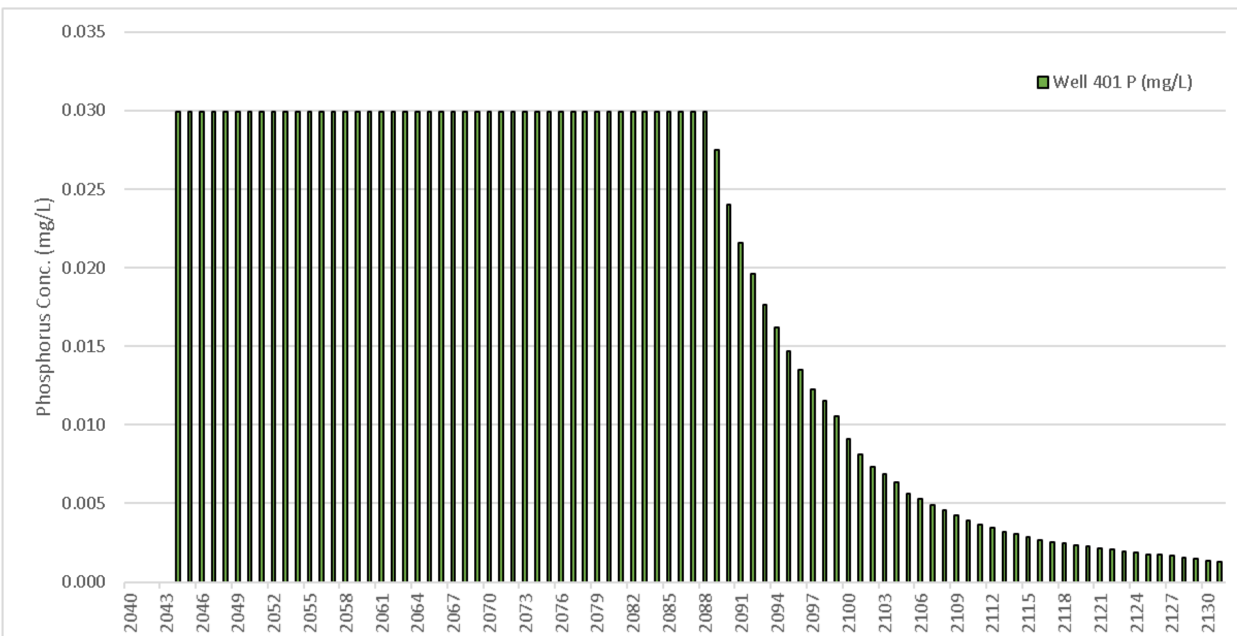


Figure 5-14. Predicted change in arsenic and phosphorus concentration in the West Plant area groundwater resulting from the proposed expansion

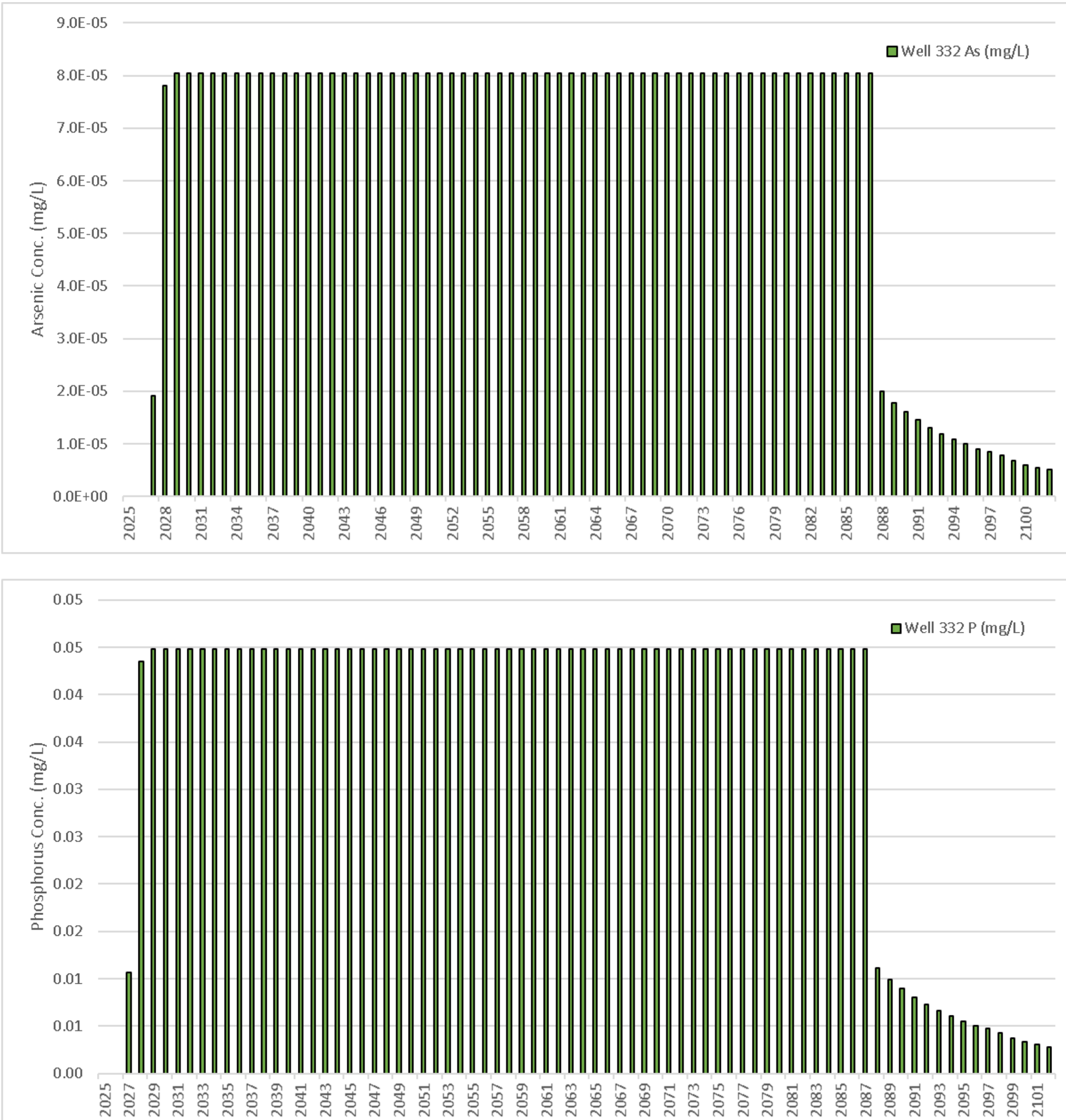


Figure 5-15. Predicted change in arsenic and phoshorus concentration in the East Plant area groundwater resulting from the proposed expansion

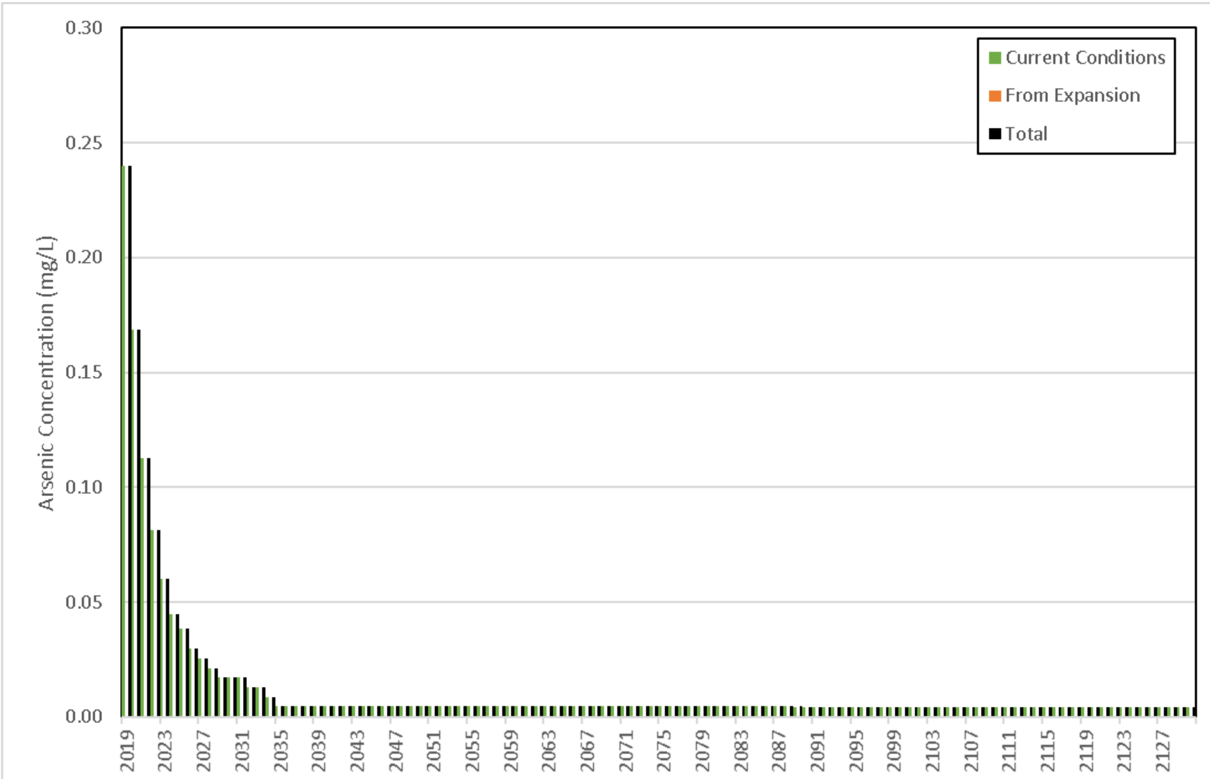
Table 5-10. Predicted incremental increases in arsenic and phosphorus concentration in groundwater in the West and East Plant areas from expansion.

Date of Observation at Capture Zone	Well 401		Well 332	
	Arsenic (mg/L)	*Phosphorus (mg/L)*	*Arsenic (mg/L)*	*Phosphorus (mg/L)*
2025			0	0
2026			0	0
2027			1.91E-05	0.0107
2028			7.80E-05	0.0435
2029			8.05E-05	0.0448
2030			8.05E-05	0.0448
2040			8.05E-05	0.0448
2043	0	0.0000	8.05E-05	0.0448
2044	8.87E-05	0.0299	8.05E-05	0.0448
2050	8.87E-05	0.0299	8.05E-05	0.0448
2060	8.87E-05	0.0299	8.05E-05	0.0448
2070	8.87E-05	0.0299	8.05E-05	0.0448
2080	8.87E-05	0.0299	8.05E-05	0.0448
2090	7.13E-05	0.0240	1.60E-05	0.0089
2100	2.69E-05	0.0091	6.03E-06	0.0034
2110	1.16E-05	0.0039	2.70E-06	0.0015
2120	6.69E-06	0.0023	1.57E-06	0.0009
2130	4.07E-06	0.0014	9.35E-07	0.0005
2140	0.00E+00	0.0000	0.00E+00	0.0000

5.4 Modeling and Assessment of Total Cumulative Effects

The modeling and assessment of the total cumulative effects includes the assessment of the effects of ongoing operations at the Don Plant (Section 5.2) combined with the incremental contributions/effects from the expanded gypsum stacks and cooling ponds (Section 5.3) over the cumulative impacts assessment period. The cumulative assessment period extends from the present day until Site closure. Per the operating assumptions made in the analysis of incremental impacts (Section 5.3), the entire facility is assumed to be operating until about 2084, with residual effects on groundwater and surface water lasting until about 2130 which is assumed to be the closure date.

Charts showing estimated cumulative concentrations over time of arsenic and phosphorus in groundwater in the target capture zones in the West Plant Area at well 401 and in the East Plant Area at wells 413 and 421 are shown in Figure 5-16, Figure 5-17, and Figure 5-18 respectively. The incremental increases in concentration are small relative to both concentrations from ongoing operations and background and are not well discerned on the charts (in most cases not visible); tabulated values are included in Table 5-11, Table 5-12, and Table 5-13. A chart showing the estimated cumulative concentration of phosphorus in the Portneuf River at Siphon Road is shown in Figure 5-19 and tabulated in Table 5-14.



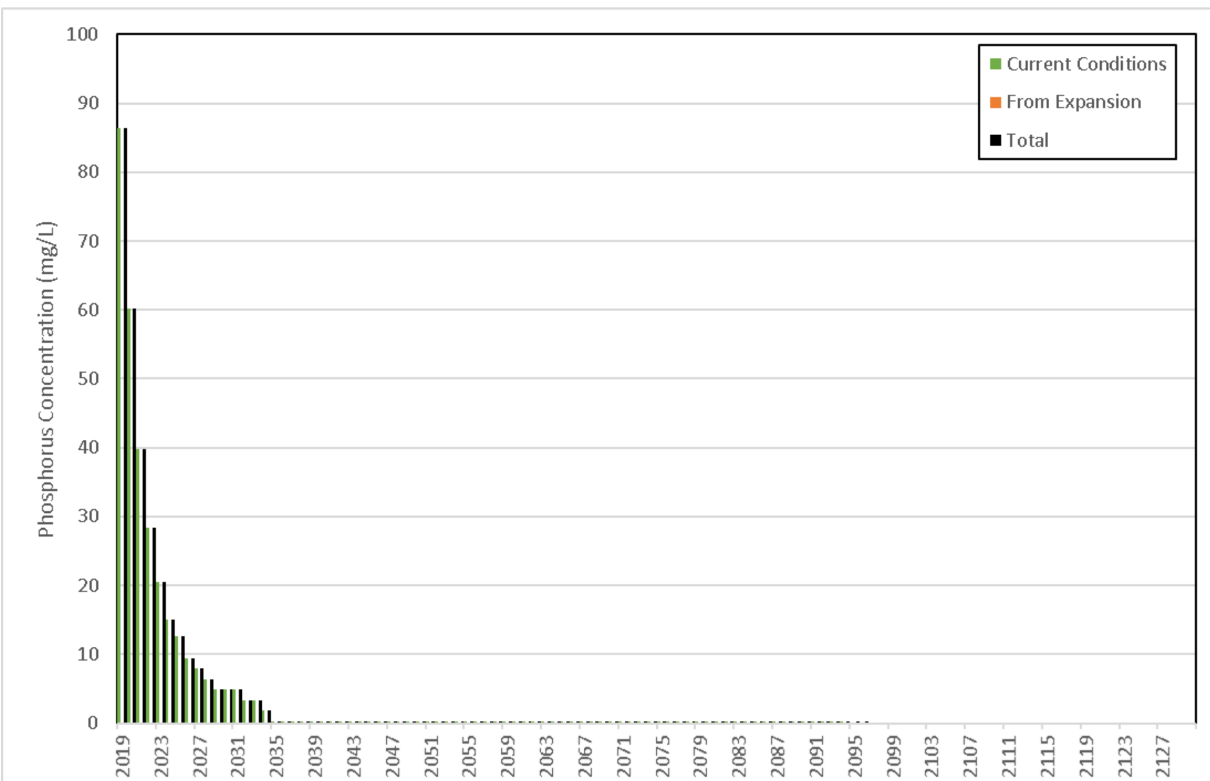
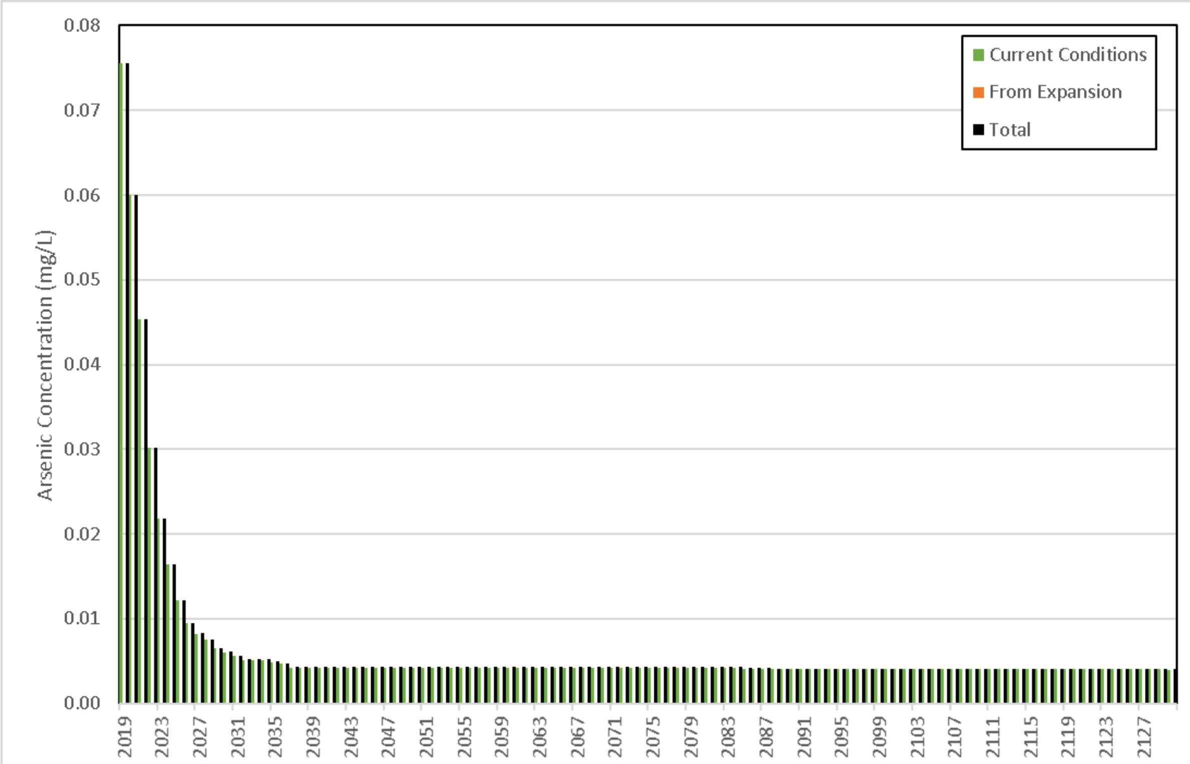


Figure 5-16. Predicted cumulative arsenic and phosphorus concentrations in groundwater at well 401 in the West Plant Area



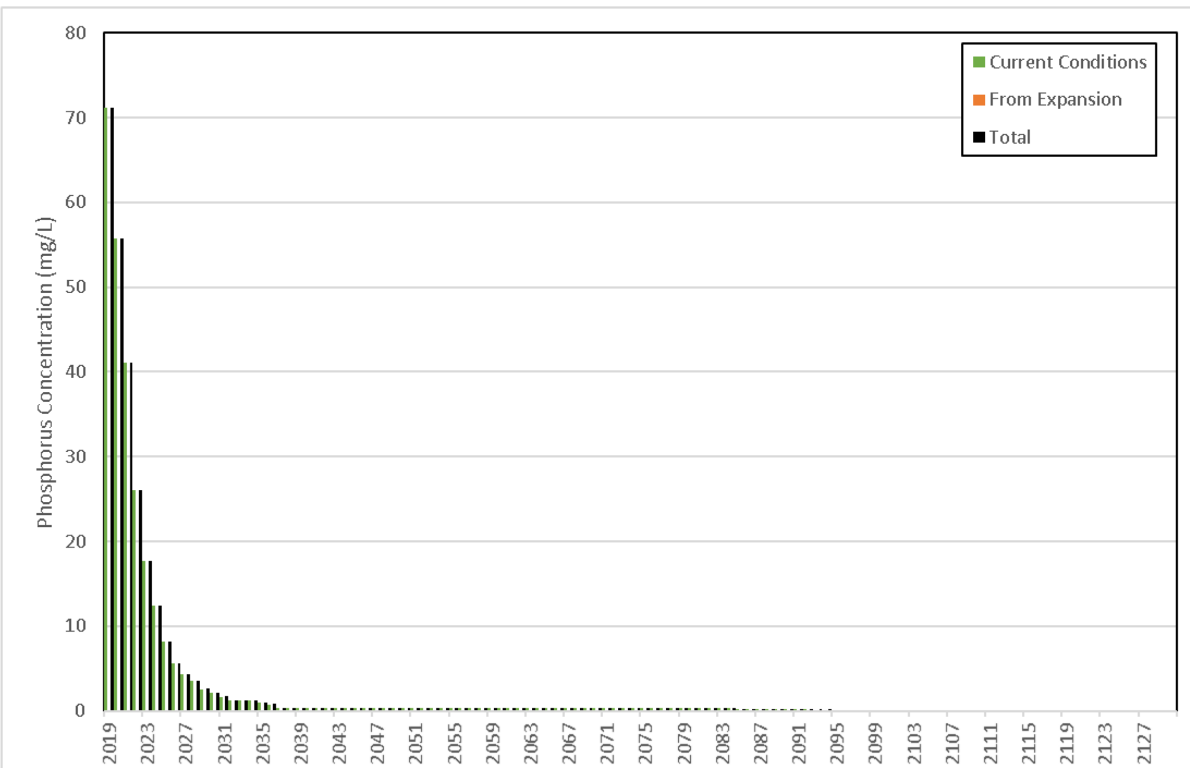
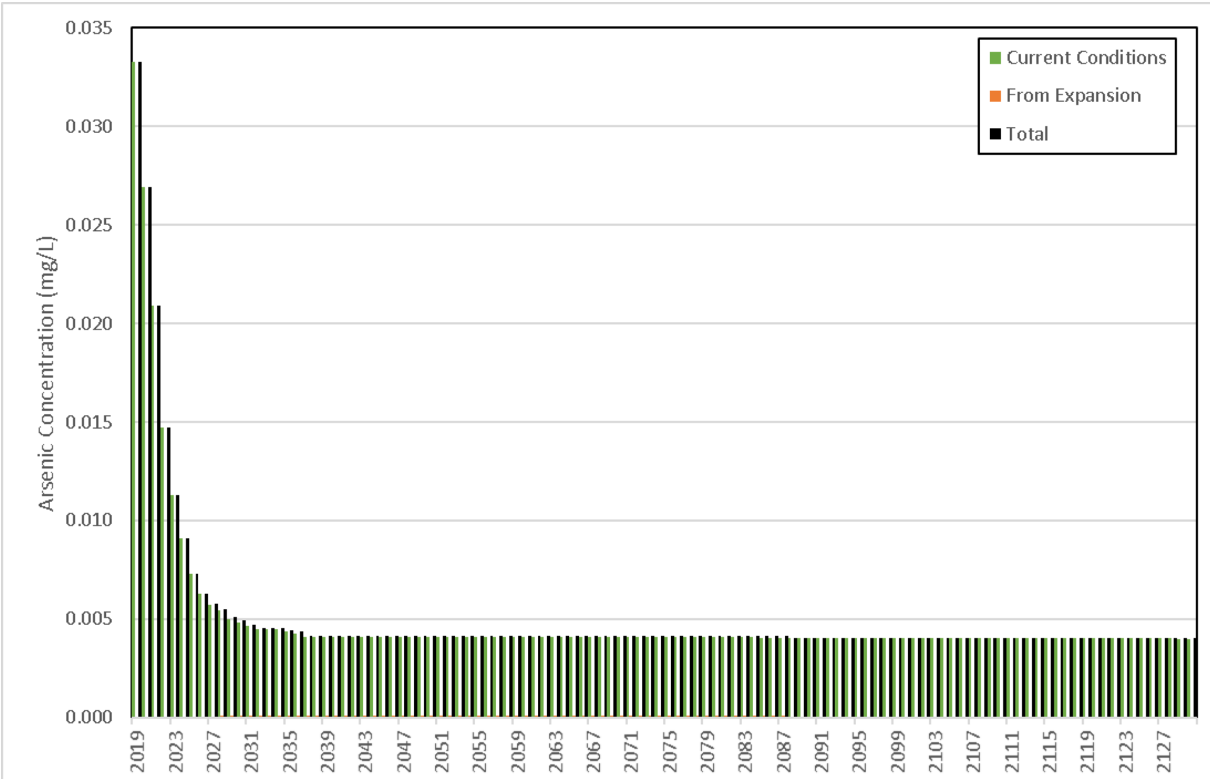


Figure 5-17. Predicted cumulative arsenic and phosphorus concentrations in groundwater at well 413 in the East Plant Area



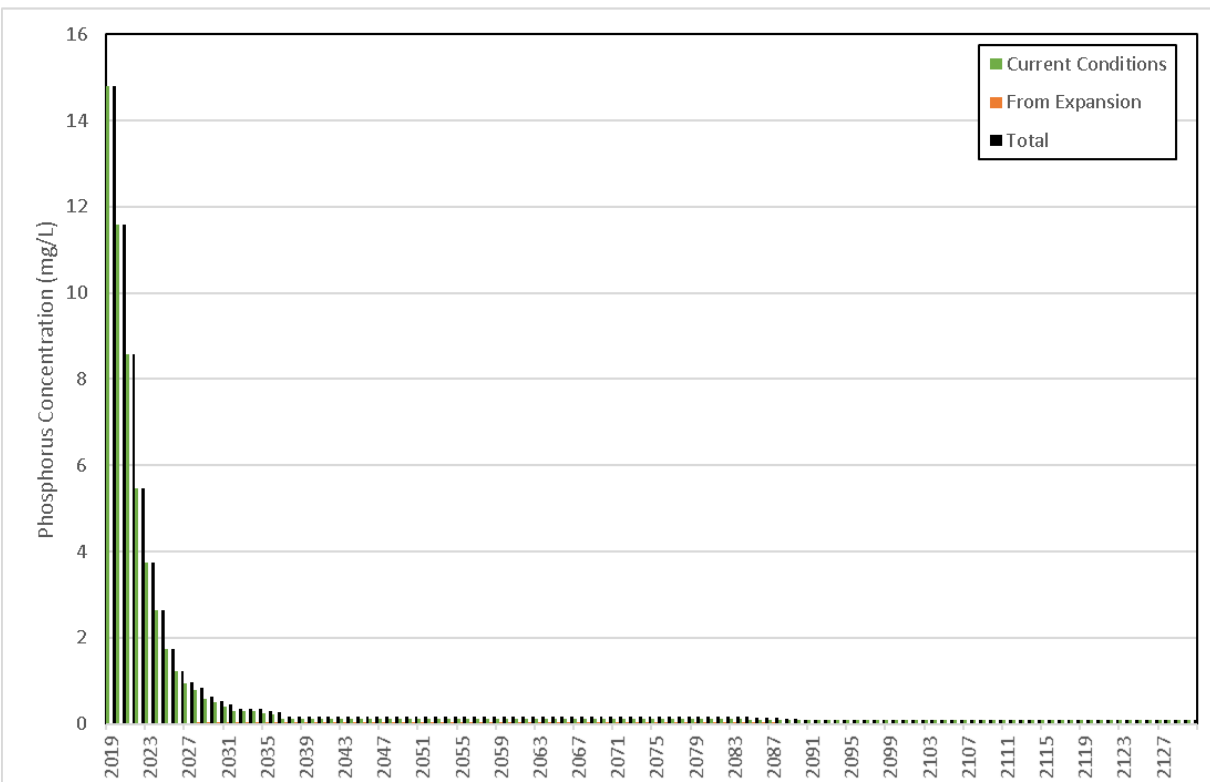


Figure 5-18. Predicted cumulative arsenic and phosphorus concentrations in groundwater at well 421 in the East Plant Area

Table 5-11. Predicted cumulative arsenic and phosphorus concentrations in groundwater at well 401 in the West Plant Area.

Date	Arsenic (mg/L)			Phosphorus (mg/L)		
	Current	*Incremental*	*Cumulative*	*Current*	*Incremental*	*Cumulative*
2019	0.2400	0.00E+00	0.2400	86.40	0.0000	86.40
2030	0.0171	0.00E+00	0.0171	4.86	0.0000	4.86
2040	0.0044	0.00E+00	0.0044	0.24	0.0000	0.24
2050	0.0044	8.87E-05	0.0045	0.24	0.0299	0.27
2060	0.0044	8.87E-05	0.0045	0.24	0.0299	0.27
2070	0.0044	8.87E-05	0.0045	0.24	0.0299	0.27
2080	0.0044	8.87E-05	0.0045	0.24	0.0299	0.27
2090	0.0043	7.13E-05	0.0044	0.20	0.0240	0.23
2100	0.0041	2.69E-05	0.0042	0.13	0.0091	0.13
2110	0.0041	1.16E-05	0.0041	0.10	0.0039	0.10
2120	0.0040	6.69E-06	0.0040	0.09	0.0023	0.09
2130	0.0040	4.07E-06	0.0040	0.09	0.0014	0.09
2140	0.0040	0.00E+00	0.0040	0.08	0.0000	0.08

Table 5-12. Predicted cumulative arsenic and phosphorus concentrations in groundwater at well 413 in the East Plant Area.

Date	Arsenic (mg/L)			Phosphorus (mg/L)		
	Current	*Incremental*	*Cumulative*	*Current*	*Incremental*	*Cumulative*
2019	0.0756	0.00E+00	0.0756	71.20	0.0000	71.20
2030	0.0060	8.05E-05	0.0061	2.08	0.0448	2.13
2040	0.0042	8.05E-05	0.0043	0.28	0.0448	0.32
2050	0.0042	8.05E-05	0.0043	0.28	0.0448	0.32
2060	0.0042	8.05E-05	0.0043	0.28	0.0448	0.32
2070	0.0042	8.05E-05	0.0043	0.28	0.0448	0.32
2080	0.0042	8.05E-05	0.0043	0.28	0.0448	0.32
2090	0.0041	1.60E-05	0.0041	0.15	0.0089	0.15
2100	0.0040	6.03E-06	0.0040	0.10	0.0034	0.11
2110	0.0040	2.70E-06	0.0040	0.09	0.0015	0.09
2120	0.0040	1.57E-06	0.0040	0.09	0.0009	0.09
2130	0.0040	9.35E-07	0.0040	0.09	0.0005	0.09
2140	0.0040	0.00E+00	0.0040	0.08	0.0000	0.08

Table 5-13. Predicted cumulative arsenic and phosphorus concentrations in groundwater at well 421 in the East Plant Area.

Date	Arsenic (mg/L)			Phosphorus (mg/L)		
	Current	*Incremental*	*Cumulative*	*Current*	*Incremental*	*Cumulative*
2019	0.0333	0.00E+00	0.0333	14.80	0.0000	14.80
2030	0.0048	8.05E-05	0.0049	0.49	0.0448	0.54
2040	0.0041	8.05E-05	0.0042	0.12	0.0448	0.17
2050	0.0041	8.05E-05	0.0042	0.12	0.0448	0.17
2060	0.0041	8.05E-05	0.0042	0.12	0.0448	0.17
2070	0.0041	8.05E-05	0.0042	0.12	0.0448	0.17
2080	0.0041	8.05E-05	0.0042	0.12	0.0448	0.17
2090	0.0040	1.60E-05	0.0040	0.09	0.0089	0.10
2100	0.0040	6.03E-06	0.0040	0.09	0.0034	0.09
2110	0.0040	2.70E-06	0.0040	0.08	0.0015	0.08
2120	0.0040	1.57E-06	0.0040	0.08	0.0009	0.08
2130	0.0040	9.35E-07	0.0040	0.08	0.0005	0.08
2140	0.0040	0.00E+00	0.0040	0.08	0.0000	0.08

Table 5-14. Predicted cumulative concentration of phosphorus in the Portneuf River at Siphon Road.

Date at River	Phosphorus (mg/L)		
	Current	*Incremental*	*Cumulative*
2019	0.2216	0.00E+00	0.2216
2030	0.1013	1.04E-04	0.1014
2040	0.0913	1.07E-04	0.0914
2050	0.0913	1.56E-04	0.0914
2060	0.0913	1.56E-04	0.0914
2070	0.0913	1.56E-04	0.0914
2080	0.0913	1.56E-04	0.0914
2090	0.0912	7.49E-05	0.0913
2100	0.0910	3.01E-05	0.0911
2110	0.0910	1.21E-05	0.0910
2120	0.0909	6.40E-06	0.0909
2130	0.0909	4.13E-06	0.0909
2140	0.0909	0.00E+00	0.0909

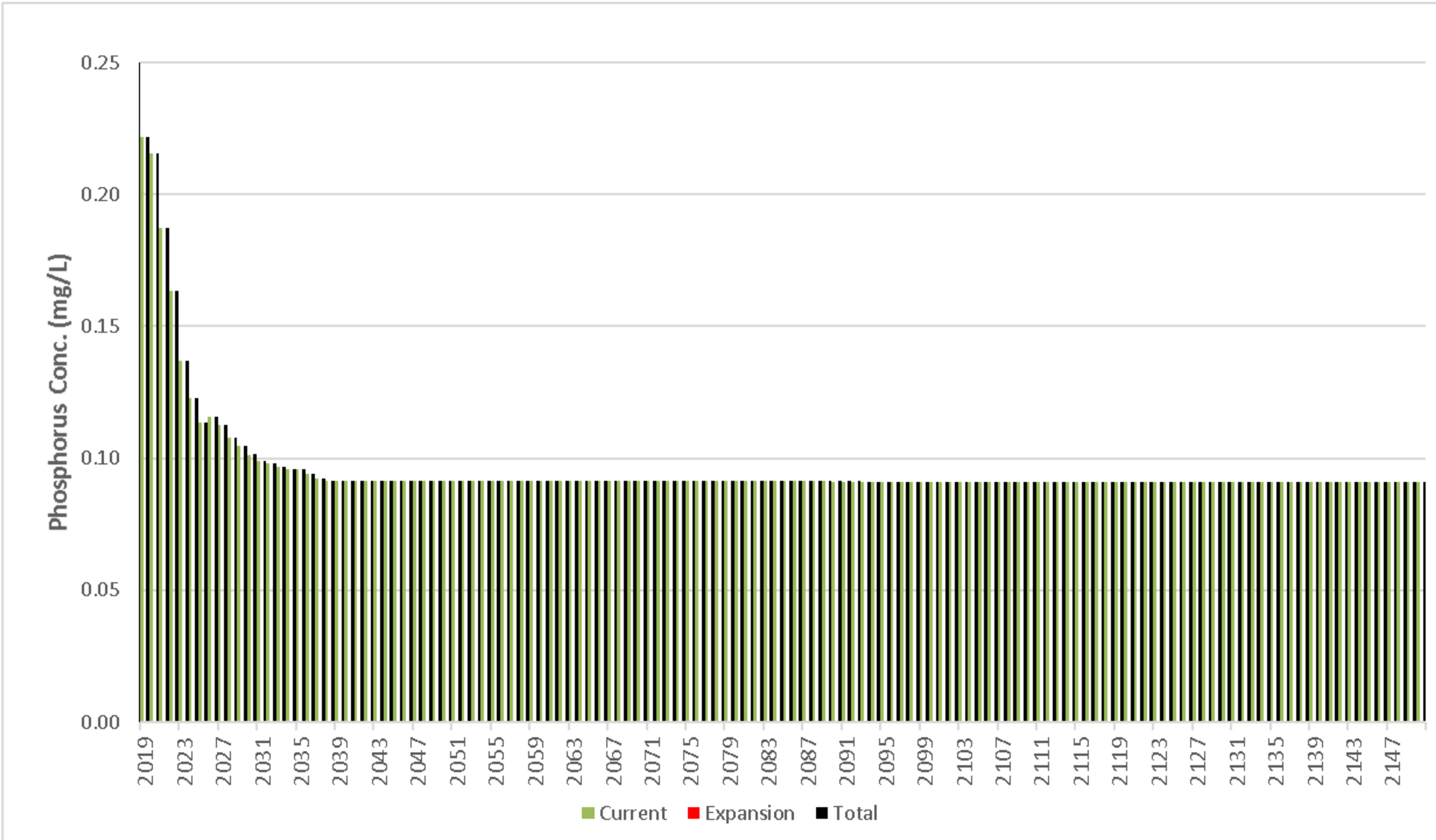


Figure 5-19. Predicted total phosphorus concentration in the Portneuf River at Siphon Road

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Blackrock Land Exchange

Final Environmental Impact Statement

Appendix I

Draft EIS Comments and Responses

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF ATTACHMENTS

ACRONYMS AND ABBREVIATIONS

BLM	Bureau of Land Management
CARA	Comment Analysis and Response Application
EIS	environmental impact statement
EMF Site	Eastern Michaud Flats Superfund Site
EPA	U.S. Environmental Protection Agency
IDEQ	Idaho Department of Environmental Quality
mg/L	milligram per liter
NEPA	National Environmental Policy Act
NOA	Notice of Availability
tpy	tons per year

1.0 INTRODUCTION

The Bureau of Land Management (BLM) published a Notice of Availability (NOA) for the Blackrock Land Exchange Draft Environmental Impact Statement (EIS) in the *Federal Register* on December 20, 2019, initiating a public comment period that ran through February 4, 2020. During this time, the public could raise concerns and provide input for the BLM to consider while preparing the Final EIS. This report describes public outreach and tribal consultation conducted for the Draft EIS, describes the process used to index and analyze comment submissions, summarizes key comments, and provides responses to all substantive comments.

The remainder of this report is organized as follows:

Section 2.0. Public Outreach – describes notifications and meetings prepared by the BLM to inform the public about the Draft EIS and how to submit comments.

Section 3.0. Tribal Consultation – summarizes consultation between tribes and the BLM that occurred during the Draft EIS comment period.

Section 4.0. Comment Submissions – reports the number of comment submissions received by submission method, affiliation, and geographic location.

Section 5.0. Comment Analysis – explains the process used to parse and categorize comments, reports the distribution of comments across assigned categories, and summarizes key substantive comments and the general types of non-substantive comments received.

Attachment A. Comment Submission Index – lists individuals and affiliated organizations that submitted comments.

Attachment B. Comments and Responses – lists substantive comments and the BLM's responses to those comments.

2.0 PUBLIC OUTREACH

2.1 Public Notifications

On December 13, 2019, the BLM mailed a Dear Interested Party letter to individuals and organizations on the Blackrock Land Exchange EIS mailing list to inform them of the forthcoming release of the Draft EIS.

Publication of the NOA for the Blackrock Land Exchange Draft EIS on December 20, 2019 (84 FR 70207), provided official notification to the public and government agencies of the availability of the Draft EIS for review and comment. On the same day, the BLM posted a press release titled "BLM Announces Release of Draft Environmental Impact Statement for Proposed Blackrock Land Exchange" to the following location on the BLM website: https://www.blm.gov/press-release/blm-announces-release-draft-environmental-impact-statement-proposed-blackrock-land. Both notifications provided key information about the Proposed Action and National Environmental Policy Act (NEPA) review process, the BLM's role as lead Federal agency, public meetings, and how to comment on the EIS. Local news station KIFI, which serves Pocatello and surrounding areas, published an online news article titled "Simplot land exchange proposal goes to the public" on December 20, 2019.

A letter to interested parties, the three volumes of the Draft EIS, and the NOA were available on the "Documents" page of the BLM's ePlanning website for this NEPA action: https://go.usa.gov/xEUuc.

Visitors could submit comments through an online interface accessible through this webpage during the comment period. Additional information about the public comment period, public meetings, and submitting comments was provided on the "Home" and "Documents" pages of the ePlanning website.

2.2 Public Meetings

The BLM hosted two public meetings during the Draft EIS comment period:

- January 7, 2020: 4:00 p.m.–6:00 p.m. at the Fort Hall Hotel and Event Center (777 Bannock Trail, Fort Hall, Idaho)
- January 8, 2020: 5:00 p.m.–7:00 p.m. at the Pocatello Field Office (4350 S Cliffs Dr, Pocatello, Idaho)

According to BLM records, 29 people attended the public meeting at the Fort Hall Hotel and Event Center, while 4 people attended the public meeting at the Pocatello Field Office. The meetings had an open house format, where attendees could browse display boards and maps highlighting key components of the Draft EIS, discuss questions or concerns with BLM and contractor staff, and provide written comments. A printed copy of the Draft EIS was available at each meeting.

3.0 TRIBAL CONSULTATION

The BLM participated in the following coordination and consultation efforts with the Shoshone-Bannock Tribes from December 2019 through February 2020.

- The BLM mailed a letter transmitting the cultural resource inventory report to the Tribes on December 3, 2019.
- The BLM mailed a letter and USB drive containing the Draft EIS to the Tribes on December 13, 2020.
- The BLM facilitated a government-to-government meeting with the Fort Hall Business Council on January 9, 2020.
- Amy Lapp, BLM Pocatello Field Office Archaeologist, met with Shoshone-Bannock Tribes cultural staff on February 7, 2020, and on March 2, 2020, to discuss the development of the Memorandum of Agreement for cultural sites eligible for the National Register of Historic Places that are present within the Federal lands proposed for exchange.

4.0 COMMENT SUBMISSIONS

4.1 Comment Submission Methods

The BLM reviewed and considered all written comment submissions received during the Draft EIS comment period from December 20, 2019, to February 4, 2020. The BLM requested that comments be submitted in the following ways:

- Submitted electronically via the ePlanning website
- Mailed to the BLM Pocatello Field Office
- Written on comment forms provided at the public meetings

The BLM also accepted comments submitted via email. In this appendix, the full content of each electronic submittal, mailed letter, and comment form is referred to as a "comment submission" or just "submission."

4.2 Comment Submissions Received

Figure 4-1, Figure 4-2, and Figure 4-3 break down the 26 total comment submissions received by submission method, affiliation, and location. Postal mail was the most used submission method, the Shoshone-Bannock Tribes were the most commonly cited affiliation, and 73 percent of commenters provided an Idaho mailing address. Attachment A provides a complete list of commenter names and affiliations.

Figure 4-1. Submissions by Method

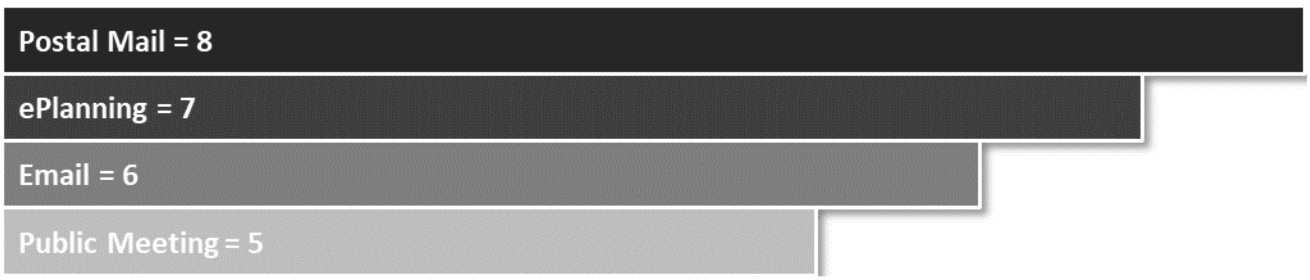


Figure 4-2. Submissions by Affiliation

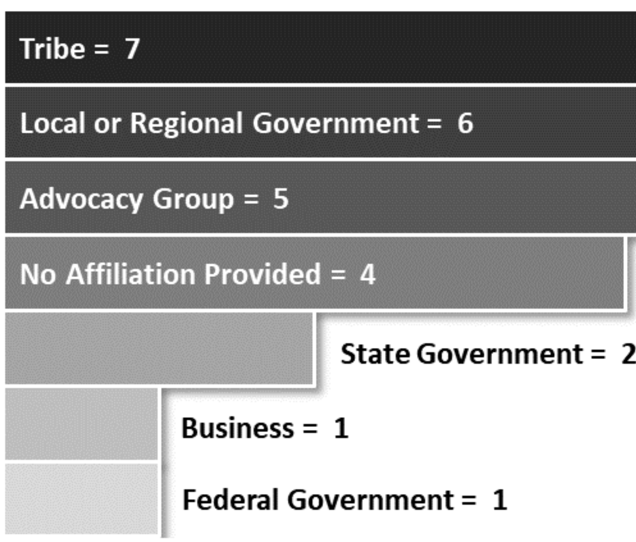
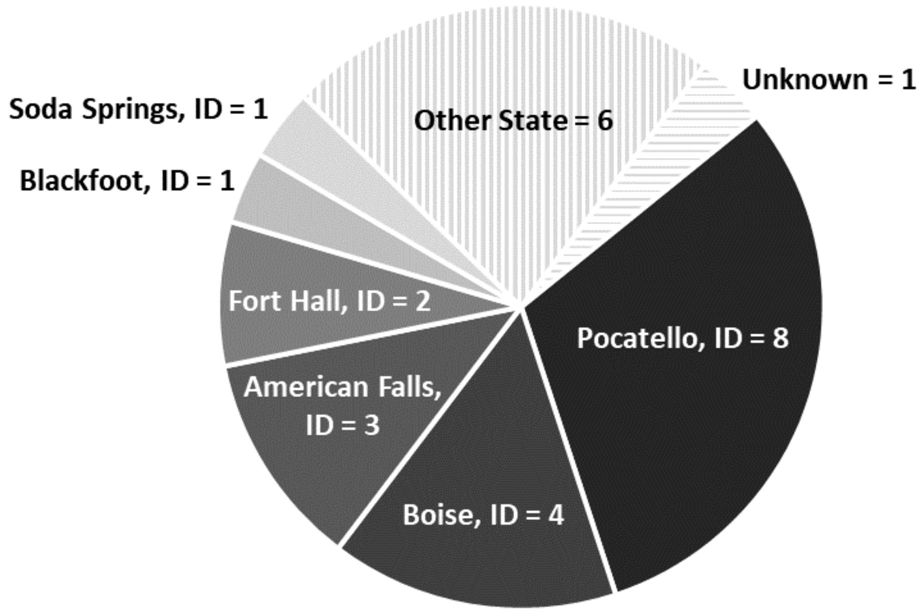


Figure 4-3. Submissions by Location



4.3 Form Letters Received

Form letters are standardized letters that are typically submitted on behalf of an organization. The BLM received two copies of a form letter originating from environmental advocacy group WildEarth Guardians. Copies of the same form letter were received previously during the scoping period for the Blackrock Land Exchange EIS. Only one copy of the form letter was reviewed for substantive comments.

5.0 COMMENT ANALYSIS

5.1 Comment Analysis Process

NEPA requires the BLM to identify and respond to all substantive public comments received during the Draft EIS public comment period. The BLM used a systematic process to review, categorize, and respond to all substantive public comments received on the Draft EIS. The BLM reviewed all content within each comment submission, then parsed the substantive content into one or more discrete "comments."

Reviewers determined whether the content of each submission was substantive or non-substantive in nature based on guidance in the BLM NEPA Handbook (H-1790-1),[1] which identifies substantive comments as those that do one or more of the following:

- Questions, with reasonable basis, the accuracy of information in the EIS
- Questions, with reasonable basis, the adequacy of, methodology for, or assumptions used for the environmental analysis
- Presents new information relevant to the analysis

[1] *BLM. 2008. National Environmental Policy Act, Handbook H-1790-1. Washington D.C. January.*

- Presents reasonable alternatives other than those analyzed in the EIS
- Causes changes or revisions in one or more of the alternatives

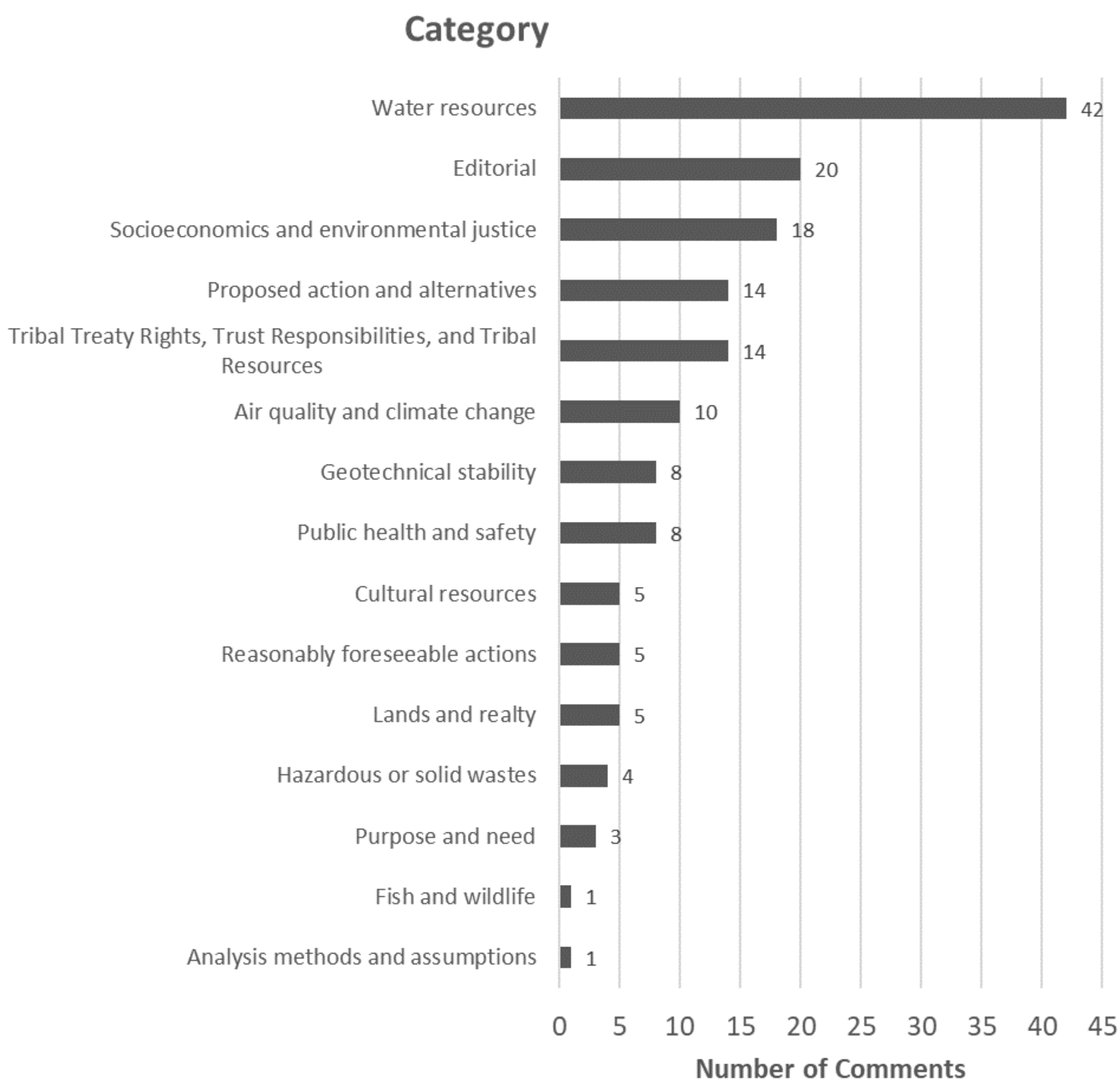
Reviewers categorized each substantive comment by category, as shown on Figure 5-1. Comment review, parsing, and categorization were performed in the BLM's Comment Analysis and Response Application[2] (CARA). Comment submissions made through ePlanning were automatically imported into CARA. Submissions made through other methods were transcribed or converted to text for entry into CARA.

5.2 Substantive Comments by Category

Figure 5-1 presents the number of substantive comments assigned to each category. The BLM parsed the 26 comment letters into 158 substantive comments. Categories with the greatest number of substantive comments included water (42), editorial (20), and socioeconomics and environmental justice (18). The greatest number of substantive comments were parsed from letters submitted by the Shoshone-Bannock Tribes (89), J.R. Simplot Company (36), and the U.S. Environmental Protection Agency (13). The BLM determined that 16 of the 26 comment submissions contained at least one substantive comment.

[2] *CARA is a software application that interfaces with the BLM's ePlanning website platform, through which public comments are submitted, and assists with comment review and analysis.*

Figure 5-1. Substantive Comments by Category



5.3 Summary of Key Substantive Comments

Attachment B contains the full text of the individual substantive comments received during the Draft EIS comment period and the BLM's responses to each comment. Key topics in the substantive comments included the following:

- Commenters requested that the BLM include additional information on other contaminants of concern besides just phosphorus and arsenic. Commenters were particularly concerned with existing and potential contamination associated with radionuclides. Commenters provided a variety of additional sources and information to consider in the EIS.

- Commenters expressed concern with potential impacts on tribal resources and tribal treaty rights and requested that the BLM further describe impacts on the tribes, including impacts on health, public safety, and fisheries.
- The Shoshone-Bannock Tribes expressed concern that the land exchange conflicts with the Fort Bridger Treaty and raised questions regarding the rightful ownership of parcels included in the land exchange.
- Commenters indicated that other alternative options should be considered, including alternative locations and methods of waste disposal and consideration of other design options for the reasonably foreseeable actions.
- Commenters requested that additional analysis of environmental justice be included in the EIS, especially related to the Shoshone-Bannock Tribes.

5.4 Summary of Non-substantive Comments

The general types of non-substantive comments received included opinion statements expressing support for or opposition to the Proposed Action or alternatives that did not provide any additional information to inform the BLM's decision. Commenters expressing support for the land exchange generally indicated that continued operation of the Don Plant and associated mining activities would have economic benefits. Commenters expressing opposition to the land exchange generally indicated that continued operation of the Don Plant and expansion of waste disposal facilities would result in adverse environmental effects.

Attachment A. Comment Submission Index

The table below lists individuals and affiliated organizations that submitted comments, sorted alphabetically by last name. The submission numbers in the third column of the table correspond with the submission numbers in Attachment B (individual comments and responses). Readers can search for their submission number in Attachment B to view the BLM's response to their individual substantive comments.

Commenter Name(s)	Affiliation (if provided)	Submission Number
Beitia, Marc	City of American Falls, Idaho	S-017
Blad, Brian C.	Pocatello, Idaho	S-006
Brown, Steve	Bannock County, Idaho	S-018
Chatburn, John	Idaho Governor's Office of Energy & Mineral Resources	S-023
Christensen, Phil	Caribou County, Idaho	S-005
Connelly, Kent	Lincoln County, Wyoming	S-003
Edmo, Ladd	Shoshone-Bannock Tribes	S-008
Edmo, Ladd	Shoshone-Bannock Tribes	S-022
Griffiths, Dave		S-016
Hauser, Scott	Upper Snake River Tribes Foundation, Inc.	S-019
Hunter, Matthew J.	Pocatello-Chubbuck Chamber of Commerce	S-004
Jensen, Kristen	Great Rift Basin Development Organization	S-025
Krupp, Chris	WildEarth Guardians	S-024
Lasely, Bill	Power County, Idaho	S-002
Little, Brad	State of Idaho	S-021
Nogi, Jill A.	Environmental Protection Agency	S-026
Prouty, Alan L.	J.R. Simplot Company	S-020
Public, Jean		S-001
Roy, Frances		S-009
Tann, Rosemary	WildEarth Guardians	S-013
Tung, Ann	WildEarth Guardians	S-012
Withheld		S-014
Withheld	Shoshone-Bannock Tribes	S-015
Withheld	Shoshone-Bannock Tribes	S-007
Withheld	Shoshone-Bannock Tribes	S-010
Withheld	Shoshone-Bannock Tribes	S-011

Attachment B. Comments and Responses

The following table provides a list of substantive public comments on the Blackrock Land Exchange Draft EIS and the BLM's responses.

Submission Number	Comment Category	Comment	Comment Response
S-020	Air quality and climate change	Under the Proposed Action, the DEIS states (on page 3-12, second paragraph) "[t]he eastern gypsum stack expansion would emit fluoride and particulate matter closer to nearby residences than the existing gypsum stack. However, because of the large decrease in the fluoride emissions from the cooling towers closure, the fluoride in forage concentrations are anticipated to decrease in all forage sampling areas with no exceedances of the State standards." The same decreases in fluoride emissions from the cooling towers are also expected with Alternative B, however, the air quality section in the summary tables (Table ES-3 on page ES-7 and Table 2-8 on page 2-17) for Alternative B state "Because the gypsum stacks would be located closer to residences east of the Don Plant, Alternative B could result in slightly higher ambient concentrations of fluoride and particulate matter, as well as higher fluoride in forage concentrations, closer to residences." The summary tables exclude critical context provided in section 3.2.4.3 for Alternative B stating, "However, as under the Proposed Action, the overall reduction in fluoride and particulate matter emissions is anticipated to negate the effects of moving some of the emissions closer to nearby populations." Simplot poses the question of whether this additional context provides critical information for the conclusions in the summary tables.	The summary tables are intended to provide a high-level summary and comparison of the information in the impacts analysis. No change was made.
S-020	Air quality and climate change	In the Cumulative Effects of the Proposed Action (section 3.2.4.1 on page 3-13), the DEIS states, "Activities associated with the development of the cooling ponds and gypsum stack expansions would result in temporary emissions of greenhouse gases. Emissions from these sources have not been quantified due uncertainties in forecasting future sources of phosphate ore and the design of the reasonably foreseeable actions." The temporary emissions are expected to be limited to emissions	Revised Section 3.2.4.1 (*Air Quality and Climate Change, Cumulative Effects, Proposed Action*): *Activities associated with construction of the cooling ponds and gypsum stack expansions would result in temporary emissions of greenhouse gases. Emissions from these sources have not been quantified due to*

Submission Number	Comment Category	Comment	Comment Response
		from mobile equipment during construction, which are anticipated to be minimal.	*uncertainties in forecasting future sources of phosphate ore and the design of the reasonably foreseeable actions, but are anticipated to be minimal in comparison to greenhouse gas emissions from Don Plant operations.*
S-020	Air quality and climate change	The Cumulative Effects on air quality of the Proposed Action (Section 3.2.4.1, pages 3-11 and 3- 12) identify "maximum increases in emission" of fluoride and PM10 for the Reasonable Foreseeable Action (RFA). Simplot has not represented maximum increases for emissions, but rather offered context on the potential change in allowable emissions by providing a range of possible reductions in anticipated permitted emission limits for fluoride and PM10. With removal of the cooling towers, operation of the new cooling pond(s) and expanded gypsum stack operations, Simplot estimates facility-wide allowable fluoride emissions would be reduced by 133 to 192 tons per year. Simplot has estimated the cooling ponds and the gypsum stack (existing plus expanded) could result in allowable fluoride emission limits ranging from 58.4 to 117 tons per year, but does not intend this range be construed as minimums and maximums. Maximum emission rates will be quantified during permitting required by IDEQ. Similarly, with removal of the cooling towers, operation of the new cooling pond(s) and expanded gypsum stack operations, Simplot estimates facility-wide PM10 emissions would be reduced by approximately 123 tons per year. Simplot estimated PM10 emissions (using historical permitting methodology) for operation of the expanded gypsum stack cooling ponds could be 5 to 6 tons per year, yet acknowledged the methodology to determine the emissions would be at the discretion of IDEQ.	Changed terminology in Section 3.2.4.1 (*Air Quality and Climate Change, Cumulative Effects, Proposed Action*) from "maximum emissions" to "potential increase in allowable emissions."

Submission Number	Comment Category	Comment	Comment Response
S-020	Air quality and climate change	Section 3.18.4.1.5 references Section 3.2 and appropriately identifies the net effect of a decrease in PM10 and fluorides with the RFA, however the values reported in this section are inconsistent with those in Section 3.2. The net decrease for fluorides is anticipated to be in the range of 133 to 192 tons per year and for PM10 it is 123 tons per year. Section 3.2 does not identify a PM2.5 emissions from the RFA or the possible reduction in PM2.5 emissions, therefore the reference of a decrease in PM2.5 for the RFA is not supported by the analysis in Section 3.2.	Removed references to specific values from Section 3.18.4.1.5 (*Environmental Justice*).
S-020	Air quality and climate change	If the land exchange is approved, Simplot will be required to obtain the necessary air quality permits regarding the proposed cooling ponds to revise and/or modify the fluoride emission standards, operating conditions and monitoring requirements for the technologies and strategies implemented for the fluoride reductions. That permitting action will require a thorough review of emissions, compliance demonstration with the National Ambient Air Quality Standards, and evaluation of National Emission Standards for Hazardous Air Pollutants from Phosphoric Acid Manufacturing Plants. The preconstruction permitting action is overseen by the IDEQ and incorporation of the subsequent monitoring requirements into the facility Title V Operating Permit is reviewed by the regional Environmental Protection Agency (EPA) office, Region 10. Although the specific air permitting action for emissions would be conducted as a separate permitting action governed by IDEQ, the BLM has conducted a thorough quantitative review of emissions of the RFA's in the DEIS. Both the specific project permit and the Title V Operating Permit go through a public review and comment process.	Reference to future permitting requirements is identified in Section 1.7 (*Supplemental Authorities and Approvals*).

Submission Number	Comment Category	Comment	Comment Response
S-020	Air Quality and climate change	Regional and national ozone trends reported by EPA indicate ozone ranges of 65 parts per billion for the region, not 42.5 ppb as reported in the DEIS. Ozone is created as a result of specific meteorological conditions combined with nitrogen oxide (NOX) and volatile organic compound (VOC) emissions. The Reasonable Foreseeable Action and Alternatives do not affect the NOX and VOC emissions from the facility.	The 42.5 parts per billion value reported is the average daily maximum 8-hour-average ozone concentration, which is correct.
S-022	Air quality and climate change	Section 3.2.1.2, Page 3-3, 2nd Bullet: While the Don Plant releases a range of emissions, the primary emissions of concern associated with the Federal and non-federal lands areas and the Don Plant are particulate matter, sulfur dioxide (SO2) and fluoride. Even your own analysis in another section - see. 3.6.2, pg. 3-32 lists contamination in soils from emissions at the plant beyond what you have listed here. This information is misleading to the public and should be amended to include all emissions. This operating facility is part of the NPL Eastern Michaud Flats Superfund Site and all contaminants of concern, including metals and radioactive isotopes that are released from the facility should be listed.	While the analysis focuses on the identified emissions and impacts associated with particulate matter, sulfur dioxide, and fluoride, note that Section 3.2.2 does present information on a broader range of emissions. Added text to Section 3.17.2.2 (*Water Resources - Affected Environment*) regarding radionuclides.
S-022	Air quality and climate change	For the past 23 years, the Don Plant has exceeded the State of Idaho's regulatory standard for air emissions of fluoride from industrial stacks at the facility. As a result, excessive amounts of fluoride have been deposited on soil and vegetation on surrounding tribal, private, and federal lands in the area. In some instances, livestock (and potentially wildlife) that consumed the contaminated flora have suffered from fluorosis, as indicated by tooth loss and bone density loss.	Refer to Section 3.2.2 (Air *Quality and Climate Change*) for information on fluoride emissions and the annual fluoride in forage reports and refer to Section 3.2.4.1 (Air *Quality, Cumulative Effects*) for the analysis of potential cumulative impacts on fluoride emissions from the Proposed Action and alternatives. Simplot estimates the maximum potential increase in allowable emissions of fluoride from the cooling ponds and gypsum stack would be 117 tons per year (tpy) while the reduction in

Submission Number	Comment Category	Comment	Comment Response
			fluoride emissions from closing of the cooling tower would be 133.3 tpy, resulting in a net decrease in fluoride emissions associated with the Don Plant.
S-022	Air quality and climate change	Wind also carries fine particles of radioactive material from the gypstack to the Reservation and toward the cities of Chubbuck and Pocatello. There are no data in the DEIS that document the gypstack as a source of radiation or evaluate the incremental or cumulative impacts to the surrounding areas. The Tribes request a full characterization of radioactive impacts from the proposed exchange.	Section 3.6.2 (*Hazardous or Solid Wastes – Affected Environment*) refers to the results of the Phase I Environmental Site assessment, which indicate that: *Soil samples taken within Sections 17 and 19 of Township 6 South, Range 34 East of the Federal lands show that concentrations of beryllium, cadmium, vanadium, zinc, polonium-210, fluoride, chromium, lead, arsenic, and total phosphorous are above background levels but do not exceed reportable units as identified in 43 CFR 302. The contaminants are attributed to deposition via air from the FMC and Don Plant facilities. Although surface soils in the Federal lands have elevated levels of some metals and inorganics and some vegetation has elevated fluoride levels, the EMF Superfund Site risk assessment identified no unacceptable human health risks from elevated concentrations and only marginal ecological risks due to fluoride in vegetation. The EPA has not proposed any further remedial actions on the Federal lands (HDR, Inc. 2019a).* The description of effects of wind-blown dust from the reasonably foreseeable actions in Section 3.6.4.1 (*Hazardous or*

Submission Number	Comment Category	Comment	Comment Response
			Solid Wastes, Cumulative Effects, Proposed Action) has been expanded to summarize the findings of an investigation of soil radionuclides in the Off-Plant Operable Unit of the EMF Superfund Site prepared by Bechtel (2010).
S-024	Air quality and climate change	The DEIS fails to provide support for statements regarding the impacts of moving emissions closer to nearby populations. The DEIS states that The planned locations of the cooling ponds would emit fluoride and particulate matter emissions closer to nearby residences than the current cooling tower location. Similarly, the eastern gypsum stack expansion would emit fluoride and particulate matter closer to nearby residences than the existing gypsum stack. DEIS 3-12. BLM anticipates that overall reductions in emissions will offset the impacts of moving those emissions closer to peoples' homes. Id. BLM fails to support this claim by citing an appropriate study or model. By failing to support its claim, BLM did not take the requisite "hard look" at the environmental impacts of the proposed action to satisfy NEPA. This deficiency must be cured in the Final EIS.	As described in Section 3.2.4.1 (*Air Quality, Cumulative Effects*), decommissioning of the cooling towers would reduce emissions of both fluoride and particulate matter. At these substantially lower levels of emissions, there would negligible potential for any effects on nearby residences from the reasonably foreseeable actions. The EIS includes a sufficient level of analysis for these reasonably foreseeable actions that could be developed following the land exchange. Following transfer of the Federal lands into private ownership, Simplot would be responsible for determining final engineering and design details of the gypsum stack expansions and the cooling ponds and permitting these facilities in accordance with other Federal and State requirements, which would include further consideration of emissions from the reasonably foreseeable actions.

Submission Number	Comment Category	Comment	Comment Response
S-022	Analysis methods and assumptions	The DEIS, as currently written, does not evaluate impacts from Alternative B. By only addressing and evaluating the impacts of Alternative A, filling in the West Canyon, there are many data gaps that need to be filled and modeled. The front page of the Abstract states that this DEIS describes and analyzes four alternatives. It does not.	The EIS includes an appropriate level of analysis for the land exchange under Alternative B and for the reasonably foreseeable actions to the extent known at this time.
S-022	Cultural resources	For the past century, Tribal members have used the open rangelands on the Reservation and on the Ceded lands for their cattle herds, using traditional methods of grazing, feeding, calving, branding, and roundup. The historical site eligible for the National Register of Historic Places (10PR666) represents a key period for the Shoshone and Bannock people, demonstrating our persistence and successful transition to Indian ranching. Simplot's proposed expansion of the gypstack would destroy these resources and the integrity of the landscape.	Refer to Section 3.4 (*Tribal Treaty Rights*) for a description of tribal resources and tribal treaty rights and the analysis of potential impacts on tribal treaty rights from the alternatives and the reasonably foreseeable actions.
S-022	Cultural resources	We are especially concerned with the potential impact to archaeological and possible burial sites on the federal lands. Historically, the Shoshone and Bannock people placed deceased individuals in rock features such as cliffs and crevices. Within one mile of the federal lands, there is a documented cliff burial. In 2014, bone fragments were found on FMC-owned parcel that had been interred in a rock crevice. The Tribes' Heritage Tribal Office (HeTO) and the Language and Cultural Preservation Staff performed a site reconnaissance and found rock crevices in the area	Refer to Section 3.4.2.2 (*Tribal Treaty Rights*), which indicates that the Tribes claim that possible burial sites occur in the area. There have been no specifically documented or recorded burial sites on the Federal lands and no burial sites were identified during the cultural resource surveys conducted on the Federal lands.
S-022	Cultural resources	The current cultural resources inventory described in the DEIS failed to capture the significance of the cliffs of the Wind Canyon located within the proposed area of exchange despite our site visit to the area with BLM Archaeologist and Pocatello Field Office representatives. The location of the cave/dwelling	The cave dwelling referenced in this comment was documented with GPS by the Field Office Archaeologist during the August 22, 2019, field visit. In the Final EIS, the BLM has identified Alternative B

Submission Number	Comment Category	Comment	Comment Response
		with an entrance made of juniper was pointed out to BLM representatives and photos (Attachment #2) were taken. This cave-dwelling is culturally significant. It is known to have multiple focuses; the view out of the cave is of the Bannock Creek area and Bannock Peak, and immediately near this location, tribal members could see the whole Pocatello Valley to the east and to the north a view of all the buttes, and as a lookout point for providing by the membership to provide warnings through smoke signals of any immediate dangers or other messages. There is evidence of hearths nearby and throughout Howard Mountain to support the claim of signal fires. The DEIS neglected to inventory the cave dwelling in the cultural resources inventory.	as the preferred alternative because, among other reasons, it would reduce adverse effects on tribal and cultural resources including the cave dwelling referenced in this comment. Added the following text to Section 3.3.2 (*Cultural Resources, Affected Environment*): *While many of the cultural sites are not recommended as eligible for listing on the NRHP, they do provide important cultural history and significance for the Shoshone-Bannock Tribes. For example, a cave dwelling in the Wind Canyon cliffs area on the Federal lands is culturally significant to the Shoshone-Bannock Tribes, as it historically provided views of the surrounding landscape and the Tribes have indicated that it was used as a lookout point for providing warnings through smoke signals of any immediate dangers or other messages.*
S-022	Cultural resources	The Tribes are concerned that additional burial sites may be located on these federal lands. During the site visit potential archaeological sites in the rocks, including rock shelters and possible crevice burials, were observed. The Tribes have significant concerns that transferring this land out of federal ownership may inadvertently transfer human remains that may be present in rock cliffs. Given the federal trust responsibility of managing and protecting cultural resources is carried with federal land ownership, the proposed transfer of land to private ownership would remove federal management responsibility	Refer to Section 3.4.2.2 (*Tribal Treaty Rights*), which indicates that the Tribes claim that possible burial sites occur in the area. There have been no specifically documented or recorded burial sites on the Federal lands and no burial sites were identified during the cultural resource surveys conducted on the Federal lands. Refer to Section 3.4.4 (*Tribal Treaty Rights - Cumulative Effects*) and Section 3.3.4 (*Cultural Resources - Cumulative*

Submission Number	Comment Category	Comment	Comment Response
		and the ability to protect cultural resources and human remains that may be undiscovered in the cliffs.	*Effects*) for a description of impacts on tribes from transfer of the Federal lands out of Federal administration.
S-022	Cultural resources	Howard Mountain is an area Tribal members have identified as a significant cultural site. In the Bannock language, the mountain range above Pocatello is called “Pukutada’a na Kaiva”. Here, the high mountains along with the swirling winds create optimum conditions inspiring the development of new meaningful and powerful songs for our Indian people. This area as described by a Tribal Elders, La Salle Pocatello, as an area where “one seeks songs.” In an interview conducted in the early 1970s, he indicated that our elders used high places to find their songs and the mountains above Pocatello are a significant area to “catch songs”. The Tribes’ HeTO asked the BLM to capture this additional resource not addressed in previous inventory’ s regarding sound as is noted in an interview of Mr. Pocatello. A Tribal member noted the following: “This range holds evidence of our people. We don’t see the physical and political boundaries acknowledged by our non-Indian intruders; but see the land as a whole, without ownership as our ancestors told us. It is our religious belief that the Creator put us here to live in harmony with all living beings, and that all things have a spirit and a purpose. Prayer and offerings were life to our people. One did not just take. “	Section 3.4.2.2 (*Tribal Resources and Tribal Treaty Rights*) was revised based on this comment, and now includes the following text: *The Tribes place great intrinsic value on the Howard Mountain area and the Federal lands offered for exchange. The Tribes value the area for its uniqueness and the relation their people have with the natural surroundings. Before the development of the Pocatello area, the Tribes occupied the land and valued the area as an important wintering ground. The Tribes used the area for camps and other uses. The Federal lands also offer a vantage point and viewshed for the Tribes. In their scoping comments, the Shoshone-Bannock Tribes indicated that the area was once described by Shoshone-Bannock elders as “a place where one seeks songs” because the high mountains and swirling winds create optimum conditions that inspire songs (BLM 2019e).*
S-020	Editorial	Page ES-5 Line 22: Change “may” to “will	Change made.
S-020	Editorial	Page 2-5 Lines 26 & 31: Change “60-millimeter” to “60-mil”	No change made. Spelling out “millimeter” is the convention used in the document.

Submission Number	Comment Category	Comment	Comment Response
S-020	Editorial	Page 2-5 Line 37: Delete “three”	Change made.
S-020	Editorial	Page 2-5 Line 40: Change “placed on the natural ground” to “placed on the properly prepared natural ground”	Change made.
S-020	Editorial	Page 2-12 Line 19: Change “may” to “will”	Change made.
S-020	Editorial	Page 3-28 Line 28: Delete “and”	Change made.
S-020	Editorial	Page 3-28 Line 30: Change “the slopes for” to “the slope and all other engineered features of”	Change made.
S-020	Editorial	Page 3-31 Line 1: Change “would” to “could”	Change made.
S-020	Editorial	Page 3-31 Line 34: Change “would be geotechnical” to “would be no additional geotechnical”	Change made.
S-020	Editorial	The Permit Emission Limits for PM10 and PM2.5. PM10 is reported at 434.04 tons per year (TPY) in Table 3-2 and should match the value provided in Table 3-1 (page 3-4) of 450.76 TPY. PM2.5 is reported at 394.94 TPY in Table 3-2 and should match the value reported in Table 3-1 (page-4) of 397.61 TPY.	Change made.
S-020	Editorial	The decant pond is 10-acres. See Title V Permit, Page 84	Change made.
S-020	Editorial	Page 3-8 Line 1: The fluoride in forage reports are submitted to IDEQ not EPA	Change made.
S-022	Editorial	ES, Page 3, 1st Paragraph: The adjacent Eastern Michaud Flats Superfund Site should be mentioned in this paragraph so that the reader is not misled.	The text referenced in the comment is a description of the area included in the land exchange. Refer to Section 1.2.2 (*Site Information and Environmental Requirements*) for a description of the Eastern Michaud Flats Superfund Site relevant to the land exchange.

Submission Number	Comment Category	Comment	Comment Response
S-022	Editorial	ES, Page 9, Proposed Action, Direct/Indirect Effects: Change "would not" to "may" in the first sentence.	The land exchange itself would not increase potential for fog and icing. The second paragraph indicates that the reasonably foreseeable actions could result in short-term and localized fogging and icing.
S-022	Editorial	Section 2.1.3.1.1, Page 2-4, 1st Paragraph: Please reference and include the "internal assessment" that Simplot conducted to determine that cooling ponds were the best alternative to address fluoride emissions.	The "internal assessment" refers to the Feasibility Study included as Appendix E. The text has been revised to refer to the Feasibility Study instead of an "internal assessment."
S-022	Editorial	Section 2.5.4.2, Page 2-14, Entire Section and Document: When discussing the "height" of the gypstack, it is inaccurate to say it is "5 I 00 feet in height". Please change the wording in this section and throughout the document to correctly indicate that "5 I 00 feet" is ELEVATION, NOT HEIGHT. Ex. "the stack can be safely raised to an elevation of 5100 feet above mean sea level (AMSL)".	Revised text to indicate 5,100 feet in elevation, as requested in the comment.
S-022	Editorial	Section 3.6.2, Page 3-32, 1st paragraph,K98 3rd sentence: Change "polonium-2010" to "polonium-210". Check the remainder of the document for the same mistake.	Change made.
S-022	Editorial	Section 3.17.2.1, Page 3-76, 3rd Paragraph: Change sentence 4 to read, "Where American Falls Lake Bed clay is present, it may be an aquitard that restricts or slows down vertical groundwater flow."	Section 3.17.2.1 reads, "Where American Falls Lake Beds Clay is present, it forms an aquitard restricting vertical groundwater flow." There is a large body of data that indicate that American Falls Lake Beds Clay acts as an effective aquitard and the modified text incorporates unnecessary uncertainty. For example, see the Remedial Investigation Report for the

Submission Number	Comment Category	Comment	Comment Response
			Eastern Michaud Flats Site (Bechtel 1996), Section 3.3.2.
S-022	Editorial	Volume 3, Appendix F - ESA, Page 30: A Table of Contents with Abbreviations and definitions should be provided for Map Findings included in the Phase I ESA. It is not discernable what Category Values represent, Action Codes, Action Name, SEQ, Site ID's- whether this is Simplot or FMC, What the Scoring represents.	The commenter is referring to the EDR Area/Corridor Report that is part of the two Phase I Environmental Site Assessment Reports prepared by HDR Engineering and included in the EIS. Page 30 refers to Focus Map 13-5665500.7s. The full EDR report includes a Key Map that defines the location of each Focus Map. The Key Map corresponds to the Phase 1 ESA report defined properties. In addition, acronyms are defined later in the EDR report where each type of database is defined. A Table of Contents is provided for the EDR report (page 1) and provides an outline for where to find items within the EDR report. The reader can find additional information about EDR at the following website: https://edrnet.com/.
S-022	Editorial	Section 5.0, Page I-54, Paragraph: Recheck text against figure call outs. Appear to be incorrect.	Figure callout references were corrected.
S-007	Fish and wildlife	I seen first Hand what waste can do to this area I seen the Birds land in the phosphorous ponds and Expose to air and Die.	Refer to Section 3.16 (*Fish and Wildlife*) for the analysis of cumulative impacts on wildlife from operation of the Don Plant and the reasonably foreseeable actions.
S-020	Geotechnical stability	In addition, as discussed 3.5.4.1, Simplot does maintain a site-wide emergency response plan. However, that plan does not specifically address a gypsum stack breach scenario as stated in the text. Simplot currently performs routine site safety	Revised Section 3.5.4.1 (*Geotechnical Stability, Cumulative Effects, Proposed Action*) based on this comment.

Submission Number	Comment Category	Comment	Comment Response
		inspections and monitoring of the gypstack. These inspections are targeted towards monitoring key operating elements and identifying critical conditions such as pond freeboard, exposed liner areas, process conveyances, slope stability, non-shrinkage cracks, seepage, piping, etc. Dike construction is monitored daily by Simplot to ensure compliance with guidelines put forth by the Engineer of Record (Ardaman & Associates, Inc. or Ardaman) (Footnote 1: Ardaman has world renowned expertise in the geotechnical and environmental engineering fields relating to the sustainable management of phosphogypsum.). On an annual basis, Ardaman performs a thorough evaluation of all facilities related to gypsum handling and storage. They also perform two to three less focused inspections throughout the year, as well as routinely review monitoring data provided by Simplot personnel.	
S-020	Geotechnical stability	Finally, section 3.5.4.4 notes that, due to a lower maximum capacity of the gypsum stack in the No Action Alternative, a lower volume of gypsum slurry and water would be released in the event of a breach. While no in-depth study has been undertaken to evaluate the matter, this seems unlikely. Under the "No Action Alternative," the same total volume of slurry and water would be impounded as in the other scenarios until approximately 2031 when the gypsum stack capacity becomes limited due to the upper compartment reaching terminal elevation. Up to that time, a full-breach failure under any scenario is expected to be on a similar scale. However, the risk of a full-breach failure, though remote, would be more likely in the "No Action Alternative" scenario where the impounded slurry and water are concentrated closer together and in fewer number of ponds. The proposed expansion areas would allow for a similar volume of water and slurry to be distributed over more individual ponds, reducing the overall impounded depth	Revised Section 3.5.4.4 (*Geotechnical Stability, Cumulative Effects, No Action Alternative*) based on this comment.

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		of free flowing materials and providing additional redundancy in containment.	
S-020	Geotechnical stability	Further, the west canyon, which contains 2:1 or steeper slopes, will be eliminated from this alternative. Simplot has experience with this type of steeper terrain and it requires personnel to tie off and repel down slopes in order to safely execute liner installation. The area proposed for Alternative B has a much shallower original ground surface in the range of 1:1 to 1:5 slopes. Though Simplot has successfully (and safely) been able to place liner on steep terrain (2:1 or steeper slope), this flatter terrain is much easier to install liner over as well as providing improved safety for heavy equipment operators and ground personnel. Initial engineering evaluation of the proposed expansion of the gypstack in this area also provides for a more natural tie in to the existing stack system.	Added the following text to Section 3.5.4.3 (*Geotechnical Stability, Cumulative Effects, Alternative B*): *In addition, Alternative B would eliminate gypsum stack expansion into the west canyon area, which has steeply sloping terrain. Instead, the gypsum stacks would be expanded into the more gently sloping terrain to the south and east of the existing gypsum stack, providing for easier construction of the gypsum stacks and the liners. Initial engineering evaluation of the proposed expansion of the gypsum stack in this area also identified a more natural tie-in to the existing stack system compared to expanding the gypsum stacks into the west canyon.*
S-022	Geotechnical stability	Must do failure mode analyses for new gypstack areas and cooling ponds.	The EIS includes an appropriate scale of analysis of potential impacts on geotechnical stability associated with the land exchange and cumulative impacts associated with the reasonably foreseeable actions in Section 3.5 (*Geotechnical Stability*). Following transfer of the Federal lands into private ownership, Simplot would be responsible for determining final engineering and design details of the gypsum stack expansions and the cooling ponds and

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			permitting these facilities in accordance with other Federal and State requirements.
S-022	Geotechnical stability	Some scientific publications suggest that the FMC/Simplot/ Eastern Michaud Flats Superfund Site is located on the edge of an ancient volcanic caldera and faulted zone (Anders, 20 I 9 and others before him). In addition, the well-documented subsidence of the Snake River Plain after the tectonic plate passed over the hot spot that now lies beneath Yellowstone National Park has resulted in many studied and mapped normal faults that Parallel the Snake River Plain boundary, such as the Trail Creek fault, 3.5 miles southeast of Batiste Springs, as well as others identified in the Bannock Range. Furthermore, this may also suggest that the origin of Batiste Springs is possibly fault-related (another Parallel subsidence-related fault) and is supported by current conceptual models of groundwater flow in the Eastern Michaud Flats Superfund Site studies. According to models of groundwater flow for both the FMC and Simplot components of the Superfund Site, groundwater beneath the Site flows according to topography from the high hills of Howard Mountain, then makes a sharp, 90-degree turn to the east, with outflow at Batiste Springs. The only possible explanation for this extreme change in flow direction is that a fractured and permeable fault zone controls groundwater flow and that fault trace Parallels other known subsidence-related faults nearby. None of this is evaluated or discussed in this DEIS but should be.	The Draft EIS describes hydrology and groundwater flow based on available references and resources. To date, the BLM has not received any specific references or studies that support the claims made in this comment.
S-022	Geotechnical stability	Section 3.5.2, Page 3-28: Provide additional information to this section identifying the estimated amount of time phosphogypsum material spilled onto federal lands for each of the three events. Was it for a day, week, or month? Provide estimated volume of material released, contaminants released,	Added text to Section 3.5.2 (*Geotechnical Stability – Affected Environment*) to provide more information on the releases and the associated remediation.

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		size of the breach in the dike and length of time it took to repair.	
S-022	Geotechnical stability	Section 3.5.4.1, Page 3-31, 2nd Paragraph: A formal failure mode effect analysis has not been completed for the proposed actions. Estimates of I l 0-150 acre-feet for the gypsum slurry and 500 acre-feet for each cooling pond is provided. Provide analysis of the run-out distance of material, using worst-case scenarios for all Parameters should a breach in a dike occur. A dike breach occurred in 2013, 2015, and 2016 releasing materials so such an event is not unrealistic. Simplot should provide details of their site-wide emergency response planning for such an event, and their emergency action plan that covers releases from the cooling ponds. This information should be evaluated to understand potential impacts on human health and the environment from a catastrophic failure before a final decision is made.	Additional information on potential response activities was added to Section 3.5.4.1 (*Geotechnical Stability – Cumulative Effects, Proposed Action*) describing Simplot's procedures for a failure. The EIS includes an appropriate scale of analysis of potential impacts on geotechnical stability associated with the land exchange and cumulative impacts associated with the reasonably foreseeable actions in Section 3.5 (*Geotechnical Stability*). Following transfer of the Federal lands into private ownership, Simplot would be responsible for determining final engineering and design details of the gypsum stack expansions and the cooling ponds and permitting these facilities in accordance with other Federal and State requirements.
S-024	Geotechnical stability	The geotechnical stability information in the DEIS is incomplete. Simplot has completed conceptual designs for the reasonably foreseeable gypsum stack expansion and cooling ponds, but has not completed stability analyses for these elements of the proposed action. DEIS 3-28. Simplot has also not completed a formal failure mode effects analysis to evaluate the potential impacts of a failure of a gypsum stack or a breach of one or more cooling ponds. DEIS 3-30. Analysis of the stability of the gypsum stacks and cooling ponds is critical for the public's understanding of the impacts of the proposed action and	The EIS includes an appropriate scale of analysis of potential impacts on geotechnical stability associated with the land exchange and cumulative impacts associated with the reasonably foreseeable actions. Following transfer of the Federal lands into private ownership, Simplot would be responsible for determining final engineering and design details of the gypsum stack expansions

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		necessary for the BLM's evaluation of whether the proposed land exchange well serves the public interest, as required by the Federal Land Policy and Management Act. BLM should delay publication of the Final EIS until the stability and failure mode effects analyses can be completed and included in the document. Proceeding without these analyses would violated NEPA's hard look doctrine and result in an arbitrary and capricious public interest determination for the land exchange.	and the cooling ponds and permitting these facilities in accordance with other Federal and State requirements.
S-014	Hazardous or solid wastes	My name is Belma Truchot Colter and I have lived on the Fort Hall Indian Reservation for 76 years and I am not in favor of the land exchange that Simplot has proposed because at some point in time they said the gypsum stack was contaminated with radiation and basically that's why I am against them putting more gypsum close to and on the Fort Hall Indian Reservation. The illnesses that are caused by radiation has been to the people who have worked with gypsum in the past at Simplot and FMC. This exposure has been a concern and also has caused people to be gravely ill. There are a lot of people that have died from cancer and other diseases which I think have been caused by the radiation. So therefore, I am against this land exchange and the storage of gypsum on our reservation.	Added text to Section 3.17.2.2 (*Water Resources - Affected Environment*) regarding radionuclides. Per the information added: *A radiological evaluation of the Lower Portneuf River concluded that there is no indication of a potential hazardous radiological exposure pathway from surface water or sediment, or for those individuals who consume trout from the Portneuf River (Beitollahi 2007). IDEQ Idaho National Laboratory Oversight staff sampled water and sediment in the Portneuf River at Batiste Road Springs and at Siphon Road, as part of a regional study that included other watersheds, and did not identify any radiological impacts (naturally occurring or man-made) above expected background concentrations (IDEQ 2008b).*
S-020	Hazardous or solid wastes	Phosphogypsum from phosphoric acid production is excluded from the definition of hazardous waste under Sub-title C of the Resource Conservation and Recovery Act due to the mining waste exclusion, also known as the Bevill Amendment at 40 CFR § 261.4(b)(7), in the Solid Waste Disposal Act Amendments of	Section 1.7 (*Supplemental Authorities and Approvals*) references future permitting requirements.

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		1980 (Public Law 96-482, 1980). However, the construction of facilities for the disposal of such materials is subject to multiple State of Idaho environmental requirements (see Appendix C).There are also a number of Simplot specific requirements and approvals needed if the land exchange occurs. For example, enforceable Orders that Simplot has signed with EPA and the State of Idaho have specific requirements in regard to the construction of a new or expanded phosphogypsum stack. [See: EPA. 2010. Remedial Design/Remedial Action Consent Decree, 1st Amendment, Statement of Work, III.D.7.d; Idaho Department of Environmental Quality. 2008. Voluntary Consent Order. Paragraph 5.h.] Figure 3 provides further information on these requirements. Finally, legislation has been introduced into the Idaho Legislature this session to give IDEQ the authority to formalize design standards for phosphogypsum stacks, including requirements for liners (see Appendix C).	
S-022	Hazardous or solid wastes	Section 3.6.2, Page 3-33, 2nd paragraph: Full characterization of the mine shaft/ adit, identified in the Phase 1 ESA on the parcel Simplot is proposing to exchange to the federal government must be completed prior to any action. All physical and chemical hazards surrounding the mineshaft must be identified	Revised Section 3.7 (*Public Health and Safety*) to provide information and analysis of the small mine shaft identified in Appendix J (*Phase I Environmental Site Assessment*) and provide a commitment that "[t]he BLM and Simplot would negotiate mitigation of the two physical hazards prior to the BLM's acceptance of title to the property."
S-022	Hazardous or solid wastes	Section 3.6.4.1, Page 3-34, 5th Paragraph: Please amend this Paragraph to include a description of what chemicals of concern would be dispersed through wind erosion off the phosphogypsum stack. The public should be made aware the phosphogypsum stack is radioactive and radioactivity and metals are expected to be dispersed in the air during construction or maintenance of the embankments.	As noted in the same section, the effects of construction on the surrounding area are expected to be similar to those addressed in the Phase I Environmental Site Assessment for the Federal lands within the Off-Plant Operable Unit of the EMF Superfund Site. The Phase I

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			Environmental Site Assessment Report for the Off-Plant EMF area reported: “A baseline ecological risk assessment conducted to evaluate potential effects of site-related contamination on the natural environment found releases of contaminants from the EMF site via movement in the air, groundwater, and wastewater. Elevated levels of several constituents have been identified in the soils and vegetation on the Public Land Selected, and adjacent private and public land. These constituents include metals, radionuclides, fluoride and phosphorous. Portions of the Public Land Selected located in Section 17 have been included in the Offsite Operating Unit of the EMF Superfund site. The ROD identifies the measures to be taken by Simplot to address site impacts. *No remedial action has taken place in the past, nor has been proposed for the public lands including the Public Land Selected due to low ecological risk and low human risk.*”
S-022	Lands and realty	The Tribes contracted with First American Title Company (“Title Company”) in Pocatello, Idaho, to conduct a comprehensive title search. The title report (“report”) prepared by the Title Company raised questions relating to rightful ownership of two of Simplot’s parcels. The Title Company found that the most recent recorded instrument for a 38.38 acre parcel within Section 7 (R4015002401) is a warranty deed from Simplot to the federal government executed in 1978. This title report	Although investigation and resolution of title disputes is beyond the scope of this EIS, the BLM has conducted due diligence in determining the status of private lands proposed for acquisition in the exchange. Title commitment order no. 3010713592ER was issued by Alliance Title and Escrow on November 23, 2009.

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		seems to indicate the U.S. may already own a parcel within the lands Simplot proposes to transfer to the U.S. as part of the land exchange. The Title Company could find no original instrument transferring parcel 14B (county identifier R4013009700) out of federal holding either through a land patent or other mechanism. The original instrument that the Title Company could identify for this parcel is a quitclaim deed from 1965 transferring ownership from the Western Portland Cement Company jointly to the Portland Cement Company of UT and the Ideal Cement Company. While Simplot does have a warranty deed for this parcel, the title research shows that there is uncertainty over the original title and the Federal Government may still have ownership of this parcel. While it is possible that there may have been modern property boundary alterations or title transfers that the Title Company was unable to find, the report indicates that there is a lack of clarity regarding the title status of at least two parcels and possibly all of the parcels proposed in the exchange. Given this confusion, the Tribes respectfully request that BLM conduct a full title search and execute proper due diligence in regard to ownership prior to any additional action. land exchange. The Tribes are also not aware of the existence of an acceptable title commitment issued by a land title company as required by the Department of Justice Title Standards and the BLM Land Exchange Handbook. The BLM has an obligation to the public to act with the utmost care in managing and exchanging federal lands and should investigate and resolve title irregularities identified by the Title Company. The resolution of this investigation should be publicly documented.	The title company subsequently issued an updated Title Commitment (file no. 342691) on June 6, 2019. The Department of the Interior Solicitor's Office will make a final determination as to the acceptability of title to the lands being acquired by the United States, pursuant to Department of Justice title standards.
S-022	Lands and realty	Section 3.6.2, Page 3-33, 2nd paragraph: The Shoshone-Bannock Tribes have identified land title irregularities with the Blackrock non-federal properties. These must be resolved, to	Although investigation and resolution of title disputes is beyond the scope of this EIS, the BLM has conducted due diligence

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		the Tribes' satisfaction (with SBT Legal Department), prior to any decision on approving this land exchange, regardless of the alternative chosen.	in determining the status of private lands proposed for acquisition in the exchange. Title commitment order no. 3010713592ER was issued by Alliance Title and Escrow on November 23, 2009. The title company subsequently issued an updated Title Commitment (file no. 342691) on June 6, 2019. The Department of the Interior Solicitor's Office will make a final determination as to the acceptability of title to the lands being acquired by the United States, pursuant to Department of Justice title standards.
S-022	Lands and realty	Section 3.10.2, Page 3-45, 4th Paragraph, 4th Sentence: The federal lands are primarily accessed for dispersed recreational use within the West Bench ... add the Shoshone-Bannock Tribes have treaty-protected rights on these federal lands to hunt, gather or practice any cultural and customary activities.	The text in Section 3.10.2 has been revised as indicated in the comment.
S-024	Lands and realty	The Final EIS must identify whether the two water rights on the public lands, No. 29-07878 and No. 29-07883, are PWR 107 federal reserved water rights. The DEIS notes that BLM holds two water rights for stockwater associated with the selected federal parcels and that these rights would be transferred to Simplot under the proposed action. DEIS 2-3 The DEIS does not mention whether these rights were originally reserved under Public Water Reserve No. 107. BLM, however, cannot eliminate these water rights if the waters and surrounding lands were withdrawn under Public Water Reserve No. 107. Springs and waterholes on public land in the West are reserved for public use by PWR 107, which was created by a 1926 President Calvin Coolidge Executive Order. [I]t is hereby ordered that every	The Federal lands referenced in this comment are not identified as public water reserves on the Master Title Plats and are not identified as a public water reserve/withdrawal in the Pocatello Resource Management Plan.

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		smallest legal subdivision of public land surveys which is vacant, unappropriated, unreserved public land and contains a spring or water hole, and all land within one quarter of a mile of every spring or water hole located on unsurveyed public land, be, and the same is hereby, withdrawn from settlement, location, sale, or entry, and reserved for public use in accordance with the provisions of Section 10 of the Act of December 29, 1916. Executive Order of Apr. 17, 1926 (Addendum), quoted in Great Basin Mine Watch v. Hankins, 456 F.3d 955, 966 (9th Cir. 2006). Clearly, if these lands and waters were “withdrawn from settlement, location, sale, or entry” by the President, BLM cannot transfer them to a private company via land exchange. “The purpose of the reservation was to prevent monopolization of water needed for domestic and stock watering purposes.” U.S. v. City & Cnty. of Denver, 656 P.2d 1, 32 (Colo. 1983); see also U.S. v. Idaho, 959 P.2d 449, 453 (Idaho 1998) (“The purpose of PWR 107 was to prevent the monopolization by private individuals of springs and waterholes on public lands needed for stock watering”). Great Basin Mine Watch, 456 F.3d at 966. The reserved water rights and associated land withdrawals were promulgated under the authority of Section 10 of the Stock-Raising Homestead Act of 1916, 39 Stat. 865 (“SRHA”), which provided that withdrawn “lands containing water holes or other bodies of water needed or used by the public for watering purposes . . . shall, while so reserved, be kept and held open to the public use for such purposes . . ..” (Footnote 1: Although the SRHA and the underlying authority of the President to withdraw such lands pursuant to the Pickett Act of 1910, 36 Stat. 847, was repealed by FLPMA in 1976, withdrawals (such as PWR 107) made pursuant to those authorities remain in force. 43 U.S.C. § 1701 note (c).) As the Interior Department stated shortly thereafter: “The above	

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		order was designed to preserve for general public use and benefit unreserved public lands containing water holes or other bodies of water needed or used by the public for watering purposes." Selections, Filings, or Entries of Lands Containing Springs or Water Holes, Circular No. 1066, 51 I.D. 457, 1926 I.D. LEXIS 45, **1-2. Because these lands and waters are still reserved under the Presidential withdrawal, they "shall, while so reserved, be kept and held open to the public use for such purposes." Transferring these lands/waters to Simplot violates the Presidential directive that they must all be "held and kept open to the public use." Assuming that the water source is a spring and is on public land it would be subject to the Executive Order of April 17, 1926, establishing Public Water Reserve No. 107. The Executive Order withdrew all springs and water holes on public lands and the surrounding acreage. It was designed to preserve for the general public lands containing water holes and other bodies of water needed or used by the public for water purposes.	
S-024	Lands and realty	In addition to creating federal reserved water rights, PWR 107 also withdrew from sale and entry all lands within a certain area surrounding the reserved springs-precluding transferring-away or development on these lands that would interfere with the "public uses" protected by PWR 107. Regarding the lands withdrawn by PWR 107, if the lands had been surveyed by 1926, PWR 107 reserved the "smallest legal subdivision," or 40 acres, around the spring. If the lands were unsurveyed in 1926, PWR 107 withdrew all lands "within one quarter of a mile of every spring or waterhole" or a circle encompassing roughly 300 acres. BLM is under an obligation to ensure that federal reserved water rights and withdrawn lands are not impaired, used, or appropriated by private interests such as Simplot to the detriment of the purposes for which the rights were	The Federal lands referenced in this comment are not identified as public water reserves on the Master Title Plats and are not identified as a public water reserve/withdrawal in the Pocatello Resource Management Plan.

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		created. In the seminal decision of Cappaert v. U.S., 426 U.S. 128 (1976), the Supreme Court rejected a challenge by private appropriators and the State of Nevada to federal protection of reserved lands and waters that would be impacted by groundwater pumping. Federal reserved water rights and lands are federal property and are "superior to the rights of future appropriators." Cappaert, 426 U.S. at 138. "[T]he United States can protect its water from subsequent diversion, whether the diversion is of surface or groundwater." Id. at 143. "Where reserved rights are properly implied, they arise without regard to equities that may favor competing water uses. See Cappaert v. U.S., 426 U.S. 128, 138-39." Colville Confederated Tribes v. Walton, 752 F.2d 397, 405 (9th Cir. 1985). BLM cannot disregard its duty to protect such federal property. "Only Congress, and not an executive branch agency, can authorize the disposition of federal property." High Country Citizens Alliance v. Norton, 448 F.Supp.2d 1235, 1248 (D. Colo. 2006) (Interior Department illegally allowed the private appropriation and use of a federal reserved water right to the detriment of the reserved water right) citing Gibson v. Chouteau, 80 U.S. 92, 99 (1871). See also Lake Berryessa Tenants' Council v. U.S., 588 F.2d 267, 271 (9th Cir. 1978) (federal agency "cannot by their conduct cause the Government to lose its valuable rights by their acquiescence, laches, or failure to act."). BLM is under an obligation to prevent any impairment or loss of the PWR 107 reserved water rights and surrounding withdrawn lands, both under PWR 107 itself (and the SRHA) as well as the general duty to not dispose of federal property without appropriate authorization. BLM has failed to do that here. Because the Presidential withdrawals in PWR 107 were enacted to protect the public interest in preserving public watering uses, BLM cannot, under any procedure, conclude that	

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		revoking/eliminating these withdrawals and reserved water rights would be in the public interest, as required as pre-requisite for the proposed land exchange under FLPMA. Consequently, BLM cannot approve any proposed action or alternative that involves the revocation/elimination of federal water rights and the surrounding withdrawn lands.	
S-020	Proposed action and alternatives	The No Action Alternative discussion in the first paragraph of section 2.4 provides the statement "Simplot would not construct the cooling ponds and the cooling towers would remain." This statement in regard to cooling ponds is specific to the proposed location currently on federal land. As further described in this paragraph, in the event the No Action Alternative is selected, Simplot would further evaluate whether another feasible (both technically and economically) action could be taken to reduce fluoride emissions to comply with the IDEQ's 2016 Consent Order (IDEQ 2016). Simplot is committed to compliance with IDEQ's 2016 Consent Order.	Revised text in Section 2.4 (*No Action Alternative*) to clarify that Simplot would not construct the cooling ponds ***on Federal lands*** under the No Action Alternative.
S-022	Proposed action and alternatives	There is a presumption in this DEIS that the chosen action will be Alternative A. All following text, analyses, and evaluations follow on that Alternative A is the choice. Alternative B appears to be presented as an afterthought, with no detailed analyses, modeling, or evaluations presented. In addition, lands added by BLM resulting in no net loss of federal lands as part of this land exchange need to be identified and discussed in this DEIS.	The EIS includes an appropriate scale of analysis for all alternatives carried forward for detailed analysis. Alternative A and Alternative B include additional non-Federal lands in the land exchange area resulting in net gain of 108 acres of land administered by the BLM.
S-022	Proposed action and alternatives	ES, Page 3, 5th Paragraph: It should be mentioned in this Paragraph that the lands proposed to further entice the exchange; the Swanson properties, have encumbrances on them including environmental easements. The intent of the easements including details about what contamination was allowed to enter this property must be included.	The BLM recognizes that the Parcel B voluntary mitigation parcels on private land may include encumbrances and easements. Existing encumbrances on these lands would be addressed by Simplot and the accepting parties prior to

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			transfer of the voluntary mitigation parcels.
S-022	Proposed action and alternatives	ES, Page 3, Alternative A, 2nd Paragraph: This Paragraph should mention and reference the Phase l and Phase II Environmental Site Assessments completed for the Blackrock Canyon Property.	The text referenced in the comment is a description of the area included in the land exchange. Refer to Chapter 3 and Appendix J for information related to the Phase I Environmental Site Assessments.
S-022	Proposed action and alternatives	ES, Page 5: This section should mention that the adjacent Superfund Site was created by the same materials (phosphogypsum, etc.) that this land exchange is addressing .... Simplot needing more land to dispose of by-products from their operations and that this material is a source of contamination leading to the site being placed on the National Priority List Superfund Site.	Refer to Section 1.2.2 (*Site Information and Environmental Requirements*) for a description of the Eastern Michaud Flats Superfund Site relevant to the land exchange.
S-022	Proposed action and alternatives	Section 2.5.5, Page 2-14, Entire Section: This section and evaluation should be amended to include a detailed analysis of utilizing other sites for gypsum storage. Sending waste gypsum slurry back to the Smoky Canyon Mine or other Simplot mine would eliminate part of the need for the land exchange and would address Simplot's land-locked dilemma at its current location. And, if coupled with state-of-the-art fluoride emission removal technologies, Simplot would have no need for the land exchange, could meet the IDEQ VCO on fluoride emissions. The Tribes have found this type of analysis was completed 45 years ago. Technologies have advanced since this was drafted and Simplot was able to construct a pipeline to bring raw materials to the plant. The following information was taken from a December 1975 ENVIRONMENTAL ANALYSIS RECORD PROPOSED LAND EXCHANGE BETWEEN U.S. BUREAU OF LAND MANAGEMENT AND THE J. R. SIMPLOT COMPANY POCA TELLO, IDAHO prepared by Dames and Moore. To summarize, the basic considerations which make the establishment of a new gypsum	An alternative to transport waste back to the Smoky Canyon Mine via pipeline was considered. This alternative was eliminated from further detailed analysis for the reasons identified in Section 2.5.5. Considering other alternatives for locating reasonably foreseeable actions is beyond the scope of this NEPA document. As noted in Section 1.3, the BLM's purpose and need is to consider the proposed land exchange.

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		storage area on nearby lands infeasible are largely the difficulty of finding a land of sufficient acreage which is not suited for a higher land use, and environmental considerations associated with seepage, accidental spills, and aesthetics (visibility). 2.4.6 Utilize Distant Sites for Gypsum Storage Sites that are too distant to pipe the gypsum to as a slurry could be utilized as a disposal area. The use of such an area would necessitate the transport of the material by rail. There would undoubtedly be a great number of problems associated with locating an area that was accessible by rail and which would be acceptable as a disposal site from the viewpoint of environmental constraints. Assuming an acceptable site could be located, the gypsum would still have to be pumped to existing storage areas for drying in much the same manner as it presently is. Costs associated with this pumping operation are estimated at $0.72 per ton. Upon drying, it would then have to be loaded into freight cars ($0. l O per ton), transported to the site, then unloaded and emplaced ($0.92 per ton). Based on a rail haul of 20 miles, shipping costs are estimated at $0.80 per ton. The total of these rehandling and shipping costs amounts to $1.82 per ton in comparison with $0. 72 per ton for disposal as a pumped slurry to the existing storage area. Based on an annual production of 1,25 million tons of gypsum, disposal by rail transport to a distant site would result in annual costs $2,275 million over and above the costs to dispose of the gypsum as it currently is practiced, a factor increases of 3,5 times. Over the proposed 60- or 80-year life of the presently operating disposal area these excess costs would amount to $13 6 and $182 million. In theory, the gypsum could be returned to the mines from which its parent phosphate ore originated. Logistical problems at the mines and freezing gypsum in ore cars in winter would present some problems, but energy costs, in	

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		terms of diesel fuel required for rail transport, make this plan environmentally unacceptable. Both mines, the Gay and the Conda, are at higher elevations than the J. R. Simplot Company plant (approximately 1,200 feet and 1,800 feet, respectively), and it would require a great deal of energy to return the gypsum, The 37-mile haul to the Gay Mine would involve 46 million freight ton miles annually and the 79-mile haul to the Conda Mine would involve 99 million freight ton-miles annually. Please amend this section include an additional alternative: returning waste gypsum slurry to the mine pits and state-of-the-art fluoride emission removal with no cooling ponds. Conduct appropriate technical, feasibility, and modeling evaluations and present in the DEIS revisions. The Tribes find it concerning BLM mentions the construction of a pipeline would not address necessary fluoride reductions at the Don Plant as directed in the Consent Order and eliminated this alternative from further detailed analysis. It is not the BLM's responsibility to determine if an alternative will meet a Consent Order issued for non-compliance with environmental permit conditions. If that is the case, BLM should equally determine the construction of an expanded gypsum stack will add additional loading of contaminants to the groundwater and further degrade groundwater and surface water quality in the area and therefore, the No- Action Alternative should be selected.	
S-022	Proposed action and alternatives	ALTERNATIVE A - CHARACTERIZATION OF THE PROPOSED DONATION TO THE TRIBES/BIA The Tribes are one of the largest single land managers in Southeast Idaho, with over 544,000 acres of land that we actively manage for the benefit of our membership. With over 97% of those acres being held in trust by the BIA or by individual tribal members, we have a great amount of management oversight across the lands within our boundaries as established in 1900. The DEIS contains a proposal	The BLM recognizes that the Parcel B voluntary mitigation parcels on private land may include encumbrances and easements. Existing encumbrances on these lands would be addressed by Simplot and the accepting parties prior to transfer of the voluntary mitigation parcels. Similarly, any administrative or

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		to donate several parcels of land within our boundaries that are currently in fee simple status back to either the Tribes or the BIA. While the DEIS characterizes this as a mitigation measure, "provided all administrative and legal actions are resolved," the Tribes and BIA were not provided with adequate information on any of the parcels until this document was released to the public. The Tribes disagree that this land exchange is in the best interest of the public when Alternative A only provides a net-gain 108 acres, while the Tribes will shoulder the burden of the long-term environmental consequences. While this land tenure adjustment now offers a net-gain of total acres there is a net loss of 693 acres of Big Game Winter Range since only 26 acres of the non-federal lands will be within the designated category according to the Pocatello Field Office's 2012 Resource Management Plan. Further, the additional Reservation lands offered by Simplot are contaminated and have environmental easements tied to them. These environmental easements clearly describe the types of contaminants that were allowed to be deposited on the lands in lieu of monetary gains. Any lands brought into Tribal ownership would require an Environmental Site Assessment ("ESA") prior to acquiring them. This process is a long and tedious undertaking and may or may not meet the regulatory requirement that clean and uncontaminated lands be brought in as Tribal trust lands rather than fee lands.	legal actions on the Parcel B voluntary mitigation parcels would be addressed prior to the transfer of the voluntary mitigation parcels.
S-022	Proposed action and alternatives	The additional acreage is clearly intended as a measure to appease the Tribes. It also appears to be written in such a manner as this component of the land exchange is a voluntary measure by the proponent, not a mandatory condition. Tribes recognize that the BLM cannot force either the BIA or the Tribes to accept a donation of property from the proponent it appears that this voluntary donation can also be retracted by the proponent if the Tribes exercise our legal rights to challenge	The conditions and process of transfer and ownership of the Parcel B voluntary mitigation parcels would be coordinated between Simplot and the accepting parties prior to transfer of the voluntary mitigation parcels.

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		this land exchange. For these reasons the additional acreage provision appears illusory. Without adequate time to conduct due diligence on any of the parcels or the pre-existing conditions on this donation, it is unlikely that the Tribes or BIA would be able to accept any offered lands. A minimum time frame of ten years should be instituted where the Tribes or BIA would be allowed to take ownership of the parcels; giving sufficient time for due diligence efforts to be completed and for risks from accepting these parcels to be assessed by the Tribes and BIA. The lack of information on this voluntary offer and the expectations of the Tribes by the proponent and the BLM is apparent. This will need to be adequately addressed in the FEIS and consulted on with the Tribes prior to releasing a Record of Decision.	
S-024	Proposed action and alternatives	The DEIS's Purpose and Need section also states that "If approved, the proposal would improve resource management in an area containing crucial mule deer winter range and secure permanent public access within a popular recreation area in accordance with the Record of Decision and Pocatello Field Office Approved Resource Management Plan." Id. If this statement is meant to further identify the purpose of the proposed action, it is clear that a land exchange is not the only action that would fulfill that purpose and it is not likely the most efficient or cost- effective. Yet the Alternatives Eliminated From Further Analysis section fails to consider any alternatives that do not include a land exchange with Simplot. The range of alternatives that were considered it too narrow and the Final EIS must consider other, reasonable alternatives to fulfill it. An alternative means of improving management of crucial mule deer winter range is to increase the amount of forage available for mule deer in winter by reducing or eliminating livestock grazing on the public lands that constitute the deer's winter	The BLM considered a reasonable range of alternatives including the alternatives considered, but eliminated. The alternatives identified in this comment are beyond the scope of the EIS and would not meet the identified purpose and need for the proposed land exchange.

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		range. An evaluation of this alternative would shed insight on the relative effectiveness of acquiring some additional winter range versus improving the winter range already under BLM's management authority. A comparison of these two alternatives would help the public understand whether any on-the- ground changes are anticipated for the private parcels that would be acquired that would improve the winter range habitat. The public would have an opportunity to learn, in other words, what indirect effects, if any, are expected from BLM management of the offered parcels. An alternative for securing permanent public access is pursuing reciprocal easement agreements with private or state landowners in the area. Another alternative for securing permanent public access is simply to purchase necessary easements from the parties with property that provides public access to the public lands designated as the recreation area.	
S-026	Proposed action and alternatives	We recommend that the air quality, water resources and other sections of the EIS include the additional information necessary to more consistently analyze the potential effects of the No Action Alternative. Additional detail in the EIS would help to make these sections more consistent with the level of detail in the analysis of No Action for Socioeconomics and Environmental Justice. For Socioeconomics and Environmental Justice, the DEIS states: Under the No Action Alternative, the reasonably foreseeable actions of the cooling ponds and the gypsum stack expansions would not be constructed. As a result, Simplot estimates that the functional life of the Don Plant would end in 2031. Consequently, all social and economic effects associated with the Don Plant would generally end 54 years earlier than under the Proposed Action. (p. 3-94) The above assumption is then used in the DEIS to inform estimates of adverse effects that would result under No Action, including,	Revised the No Action Alternative cumulative impacts analysis in Section 3.2.4.4 (*Air Quality and Climate Change, Cumulative Effects, No Action Alternative*) and Section 3.17.4.4 *(Water Resources, Cumulative Effects, No Action Alternative*) to indicate reduced potential for impacts due to reduced production and a shorter Don Plant life under the No Action Alternative.

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		for example, " ... taxes would be collected for fewer years, resulting in long term adverse effects." (p. 2-24). Simplot's estimate that the functional life of the Don Plant would end in 2031 is not carried forward at the same level of detail in the air quality and water resources analyses. For air quality, the DEIS states that under No Action, " ... air pollutant emissions from operation of the Don Plant would continue at approximately the same levels shown in Table 3-2 for the foreseeable future." (p. 3-10). For water resources, the DEIS states that under No Action"... the ongoing remedial actions and trends in groundwater quality are expected to continue, as described in Section 3.17.2." (p. 3-86). To the extent that an end of the functional life of the Don Plant in 2031 is an appropriate factor to consider in detail in relationship to all resources analyzed, we recommend the EIS analyze and disclose the likely impacts on meeting fluoride forage standards if the plant closes in 2031. For water resources, we recommend the EIS analyze and disclose the likely impacts on meeting total maximum daily targets for phosphorous if the plant closes in 2031.	
S-026	Proposed action and alternatives	Alternatives Eliminated from Further Analysis Further Reductions in Federal Land Exchange Area We recommend that the EIS revise this alternative to 'Further Reductions in Land Exchange Area' or explain why a reduction in federal land included in the exchange would not be coupled with a reduction in non-federal lands.	The non-Federal lands included in the land exchange are those that were proposed by Simplot. As described in Section 2.5.1, further reductions in the Federal land acreage would not meet Simplot's purpose and need. Removed the following text in Section 2.5.1 for clarity: *Also, further reductions in the Federal land could result in an appraisal value of the non-Federal lands exceeding the value of the Federal land.*

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S-026	Proposed action and alternatives	Fluoride Reduction Alternatives We recommend the EIS provide an update, if available, on Simplot's evaluation of fluoride reduction alternatives. According to Appendix E page 4-1, "Simplot is currently investigating hybrid options somewhere between full indirect process water cooling and cooling ponds. This investigation is on going." We also recommend the EIS identify other fluoride reduction alternatives that may exist beyond indirect process water cooling, fluoride process condensate, or a hybrid of those two approaches. It will be important to identify the other fluoride reduction alternatives because the DEIS states on page 2-12 that, under No Action, "Simplot would evaluate whether another feasible (both technically and economically) action could be taken to reduce fluoride emissions to comply with the IDEQ's 2016 Consent Order (IDEQ 2016)."	Revised Section 2.4 (*No Action Alternative*) to state: *Additionally, under the No Action Alternative, the Federal lands would be unavailable for expansion of Simplot's gypsum disposal facilities. Simplot has indicated that failure to obtain the Federal lands for expansion of the gypsum stacks would require the company to reduce production rates and/or cease production at the Don Plant earlier than described under the Proposed Action. If the land exchange were not approved, Simplot would continue to evaluate other fluoride reduction and waste disposal options to enable continued operation of the Don Plant; however, as described in Section 2.5 (Alternatives Eliminated from Further Analysis), no feasible alternatives have been identified at this time.*
S-026	Proposed action and alternatives	Gypsum Stack Alternatives We recommend the EIS include additional information on other potential locations for gypsum disposal. Specifically, we recommend the EIS include an evaluation of the technical and economic feasibility of other private land. As part of this evaluation, we recommend including a discussion of the implications of Resource Conservation and Recovery Act Subtitle C requirements on the establishment of new locations for gypsum disposal. It is important to identify other potential locations because the DEIS states on page 2-12 that, under No Action, "Simplot has indicated that failure to obtain the Federal lands for expansion	Revised Section 2.4 (*No Action Alternative*) to state: *Additionally, under the No Action Alternative, the Federal lands would be unavailable for expansion of Simplot's gypsum disposal facilities. Simplot has indicated that failure to obtain the Federal lands for expansion of the gypsum stacks would require the company to reduce production rates and/or cease production at the Don Plant earlier than described under the Proposed Action. If the land exchange were not*

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		of the gypsum stacks would require the company to... further evaluate other potential locations for gypsum disposal...”	*approved, Simplot would continue to evaluate other fluoride reduction and waste disposal options to enable continued operation of the Don Plant; however, as described in Section 2.5 (Alternatives Eliminated from Further Analysis), no feasible alternatives have been identified at this time.*
S-026	Proposed action and alternatives	Phosphoric Acid Manufacturing Process Alternatives We recommend that the EIS include information on the technical and economic feasibility of different types of phosphoric acid manufacturing processes. It is important to consider the technical and economic feasibility of different types of phosphoric acid manufacturing processes because the DEIS states on page 2-12 that, under No Action, “Simplot has indicated that failure to obtain the Federal lands for expansion of the gypsum stacks would require the company to... construct a different type of phosphoric acid manufacturing process.”	Revised Section 2.4 (*No Action Alternative*) to state: *Additionally, under the No Action Alternative, the Federal lands would be unavailable for expansion of Simplot’s gypsum disposal facilities. Simplot has indicated that failure to obtain the Federal lands for expansion of the gypsum stacks would require the company to reduce production rates and/or cease production at the Don Plant earlier than described under the Proposed Action. If the land exchange were not approved, Simplot would continue to evaluate other fluoride reduction and waste disposal options to enable continued operation of the Don Plant; however, as described in Section 2.5 (Alternatives Eliminated from Further Analysis), no feasible alternatives have been identified at this time.*
S-012	Public health and safety	Expanding operations would also harm the health of the Tribes’ members and others living downstream from the Don Plant. Water quality studies have found dangerously high levels of arsenic and selenium downstream from the Don Plant, and	Refer to Section 3.2 (*Air Quality and Climate Change*), Section 3.17 (*Water Quality*), and Section 3.13 (*Soils*) for a description of existing conditions and

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		elevated contaminate levels have been found in soils both on- and off-site. The phosphate processing facility's on-site waste storage--the "gyp stacks"--has also degraded local air quality.	potential impacts on the resources referenced in the comment.
S-022	Public health and safety	Health impacts, both physical and mental, from living adjacent to one of the nation's most hazardous toxic sites, a National Priority List Superfund site, and knowing the federal government is proposing to increase a source of the very contamination that has polluted the area adds to health stressors. Expansion of the gypstack results in a greater surface area exposure of the contaminant source. The Tribes believe that data show that this land exchange will result in negative health and environmental effects not only to members of the Tribes but residents in the cities of Chubbuck and Pocatello.	The EIS describes the affected environment associated with past and ongoing operations at the Don Plant and potential incremental effects on contamination associated with the reasonably foreseeable actions. Refer to Section 3.2 (*Air Quality and Climate Change*), Section 3.4 (*Tribal Treaty Rights*), Section 3.6 (*Hazardous or Solid Wastes*), Section 3.17 (*Water Resources*), and Section 3.18.4.1.2 (*Environmental Justice*) for information on the effects referenced in the comment.
S-022	Public health and safety	The land Simplot proposes to exchange to the BLM contains physical and possibly chemical health and safety issues. As recognized in Appendix F of the DEIS, there is a mineshaft and adit on the land. The extent of physical hazards is uncharacterized and additional features of land surrounding this mineshaft/adit recognize the extent of the mine may not be localized. This is a public health and safety issue. Tribes request a full characterization to identify the extent of the mineshaft and any possible historic mining operations or exploratory activities in this area be completed prior to the proposed action.	Revised Section 3.7 (*Public Health and Safety*) to provide information and analysis of the small mine shaft identified in Appendix J (*Phase I Environmental Site Assessment*) and provide a commitment that "[t]he BLM and Simplot would negotiate mitigation of the two physical hazards to the satisfaction of the BLM authorized officer prior to the BLM's acceptance of title to the property."
S-022	Public health and safety	The DEIS does not evaluate health impacts from the proposed land exchange. The Tribes request this impact be evaluated. For example, operations at the EMF Superfund Site have contributed to human health advisories for fish consumption within the boundaries of the Reservations on the Portneuf and	Revised Section 3.4 (*Tribal Treaty Rights, Trust Responsibilities, and Tribal Resources*) to include more information on fish consumption advisories, health

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		Snake River, as well as the American Falls Reservoir. These advisories are related to the bio-accumulation of contaminates from the watershed; increasing the size of the gypsum stack will exacerbate these conditions. The Tribes' membership subsists on these fish and may experience adverse health outcomes at a higher rate due to this land exchange.	effects of contamination, and analysis of impacts on fisheries.
S-022	Public health and safety	The DEIS recognizes the Proposed Action could cause fog and ice during winter months on U.S. Highway 30 and Interstate 86 throughout the operational life of the cooling ponds. The Tribes are concerned that an increase in auto accidents may result and request BLM and Simplot to address what actions will be taken to prevent an increase in accidents as a result of this action.	The BLM has limited authority to require and enforce mitigation measures associated with the reasonably foreseeable actions on private lands if the land exchange is approved. Following transfer of the Federal lands into private ownership, Simplot would be responsible for determining final engineering and design details of the gypsum stack expansions and the cooling ponds and permitting these facilities in accordance with other Federal and State requirements. Federal and State permitting of the facilities on private land could further consider potential impacts on fog and icing.
S-022	Public health and safety	It is highly unlikely that any study done to evaluate environmental impacts to human health and the environment will be substantial enough to fully assess impacts that may occur over the lifetime of the action (disposal of waste materials in large quantity and exposure to air, water, soil, and biological factors).	The EIS includes an appropriate scale of analysis of potential cumulative impacts associated with construction of the reasonably foreseeable actions.
S-022	Public health and safety	Volume 3, Appendix F - ESA, Page Vi, 3rd bullet: East of Blackrock Canyon Road (Parcel R4013009700), at one of the rock outcrops, is a mine shaft- entrance to an underground mine. This a physical hazard. Lands identified in during Site	Revised Section 3.7 (*Public Health and Safety*) has been revised to provide information and analysis of the small mine shaft identified in Appendix J (*Phase*

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		Reconnaissance- documented in Section 5.2- "There is also an area on the ridgeline on the south side of this canyon that is flatter and may have been dug out at one point. For safety, HOR did not attempt to enter or go to the edge of the adit." The Tribes request an assessment of the area to be completed to understand the full extent of potential physical and chemical hazards associated with abandoned mines. A full characterization of the mineshaft should be completed prior to any land exchange.	*I Environmental Site Assessment*) and provide a commitment that "[t]he BLM and Simplot would negotiate mitigation of the two physical hazards to the satisfaction of the BLM authorized officer prior to the BLM's acceptance of title to the property."
S-022	Public health and safety	Volume 3, Appendix F - ESA: It is unclear to Tribes how the physical hazards identified do not rise to the level of a Recognized Environmental Condition in the Phase I ESA.	HDR conducted the Phase I Environmental Site Assessment of the pre-acquisition of non-Federal lands in conformance with the scope and limitations of ASTM Practice E1527. ASTM defines Recognized Environmental Conditions as follows: *The presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. De minimis conditions are not recognized environmental conditions (see definition below).* At the request of the BLM, HDR included a review of property for physical hazards, which is defined by BLM as: *Man-caused situations, such as mine shafts, high walls, unsafe bridges, primitive roads, or similar*

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			features, where the potential exists for injury or death to visitors on the lands before the disposal is completed. While HDR identified and reported several physical hazards within the pre-acquisition of non-Federal lands, these hazards are not *Recognized Environmental Conditions* as defined by ASTM (do not involve hazardous substances or petroleum products).
S-020	Purpose and need	Where the text references the expansion of phosphate processing operations in the Abstract, ES- 2, and Page 1-1, please provide clarification similar to the text in the Purpose and Need section that the intent is to maximize the life of the Don Plant through expansion of the gypstacks not expand “phosphate processing”	Change made. Text revised for consistency with the purpose and need statement in Section 1.3.
S-022	Purpose and need	There are other ways to meet fluoride reduction requirements of the 2016 IDEQ Consent Order than by constructing cooling ponds. There are proven stack-scrubbing technologies to reduce and eliminate fluoride in air emissions. These technologies should be employed in order to reduce the acreage footprint of federal lands requested for this exchange. It is disingenuous and misleading to the public to suggest that cooling ponds are required as a reason for Simplot needing this land exchange in the Notice of Intent letter from BLM dated May 20, 2019, and in the DEIS Executive Summary.	Refer to Section 2.5.2 (*Fluoride Reduction Alternatives*) for a description of other fluoride reduction alternatives considered and the rationale for eliminating them from further detailed analysis. The BLM's NEPA Handbook (H-1790-1) provides that "[t]he purpose and need statement for an externally generated action must describe the BLM purpose and need, not an applicant’s or external proponent’s purpose and need." Since Simplot’s land exchange proposal constitutes an externally generated action, the BLM’s purpose in this matter is to evaluate the land exchange proposal. The BLM’s need is to meet its statutory

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			and regulatory obligations which in this case, include responding to the proposal pursuant to the Federal Land Policy and Management Act of 1976, as amended. The BLM's purpose and need statement is described in Section 1.3 and is appropriate for the EIS. The BLM's NEPA Handbook (H-1790-1) also states: "The applicant's purpose and need may provide useful background information, but this description must not be confused with the BLM purpose and need for action." The BLM took into consideration the proponent's purpose and need, which should not be confused with BLM's purpose and need for the action.
S-024	Purpose and need	The DEIS states that the purpose "is to evaluate the land exchange proposal." DEIS 1-3. Contrary to the NEPA Handbook's instruction, this statement describes the purpose of the DEIS, but not the purpose of the proposed action. The DEIS states that the "need is to respond to the proposal pursuant to the Federal Land Policy and Management Act of 1976 (FLPMA), as amended." Id. This is essentially the same as the stated purpose and again describes the need for the document rather than the need for the proposed action. Given the unreasonably narrow purpose and need statements it is not possible for the public or decision-maker to determine whether the offered alternatives are unreasonable or whether other potential alternatives are reasonable. This frustrates the purpose of NEPA.	The BLM's NEPA Handbook (H-1790-1) provides that "[t]he purpose and need statement for an externally generated action must describe the BLM purpose and need, not an applicant's or external proponent's purpose and need." Since Simplot's land exchange proposal constitutes an externally generated action, the BLM's purpose in this matter is to evaluate the land exchange proposal. The BLM's need is to meet its statutory and regulatory obligations which in this case, include responding to the proposal pursuant to the Federal Land Policy and Management Act of 1976, as amended.

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			The BLM's purpose and need statement is described in Section 1.3 and is appropriate for the EIS. The BLM's NEPA Handbook (H-1790-1) also states: "The applicant's purpose and need may provide useful background information, but this description must not be confused with the BLM purpose and need for action." The BLM took into consideration the proponent's purpose and need, which should not be confused with BLM's purpose and need for the action.
S-020	Reasonably foreseeable actions	Future construction and operation of the reasonably foreseeable actions on the acquired Federal lands would require appropriate permits, licenses, and/or compliance with all existing State and Federal Consent Orders (see Table 1.) The appropriate permits/approvals for construction of the proposed facilities would be approved by IDEQ and EPA.	Section 1.7 (*Supplemental Authorities and Approvals*) references future permitting requirements.
S-020	Reasonably foreseeable actions	Separate State and Federal Review and Approval of Engineering Design Is Required for Reasonably Foreseeable Future Actions Which Include Phosphogypsum Stack Expansion As stated above, the RFAs including gypstack expansion and the construction of cooling ponds will require separate review and approval by state and federal agencies. The U.S. District Court for the District of Idaho recognized this in its 2011 Memorandum Decision stating: "With regard to the selected lands the BLM found that any future gyp-stack would be regulated by others including the EPA and IDEQ. (AR 308). This prediction was accurate." The 2007 Decision Record/Finding of No Significant Impact IDI-35337 (AR 308) provides further clarification regarding the roles of EPA and IDEQ in the	Section 1.7 (*Supplemental Authorities and Approvals*) references future permitting requirements.

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		permitting process as follows: "While the BLM does not permit or authorize industrial facilities on private land, any future development will be subject to the appropriate regulatory authorities including local, state and Federal oversight. The Clean Water and Clean Air Acts as enacted by the United States Congress provide for Federal collaboration through the EPA with local authorities for regulatory oversight for activities that cause water or air pollution. The state of Idaho designated the Department of Environmental Quality as the primary administrative agency to administer groundwater and air quality protection programs for the State." Requirements for lining any new gypstack is one example of state and federal regulations pertaining to the RFAs. The 2008 Voluntary Consent Order (VCO) with Idaho Department of Environmental Quality (IDEQ) as follows: "Any new gypsum storage/stack built at the Don Plant, including any gypsum stack built on any new land acquired for this purpose, shall include a liner design, a siting evaluation report, a background water quality investigation, a groundwater monitoring program, and a corrective action plan in the event of liner failure. The design and supporting documentation, operation and maintenance procedures, final reclamation plans and closure plans for any new gypsum stack shall be approved by the Department prior to the start of construction." Simplot agreed to implement various aspects of the 2010 Interim Amendment to the Record of Decision ROD with EPA including liner requirements for new gypstack as follows: "New gypsum stack. If Simplot plans to construct a new gypsum stack that has the potential to impact the CERCLA remedy, Simplot shall notify EPA at least 180 days prior to beginning such construction. With that notification, Simplot shall provide to EPA the new gypsum stack design, including liner design, a siting evaluation report, a background water	

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		quality investigation, a groundwater monitoring program, a corrective action plan in the event of liner failure, and proposed construction schedule." In reference to gypsum stack expansion at the Don Plant EPA has stated that "…it is [the Agency's] expectation that the construction will be completed in accordance with the design documents provided and consistent with all applicable federal and state environmental regulations." (Footnote 5: Jennings (EPA) to Johnson (Simplot), Gyp Stack Lateral Expansion Report, March 31, 2015.)	
S-022	Reasonably foreseeable actions	The proposed location of cooling ponds in the DEIS pose a threat to a long stretch of the Portneuf River, in the event of a failure.	The EIS includes an appropriate scale of analysis of potential impacts on geotechnical stability associated with the land exchange and cumulative impacts associated with the reasonably foreseeable actions in Section 3.5 (*Geotechnical Stability*). Following transfer of the Federal lands into private ownership, Simplot would be responsible for determining final engineering and design details of the gypsum stack expansions and the cooling ponds and permitting these facilities in accordance with other Federal and State requirements.
S-022	Reasonably foreseeable actions	Section 2.1.3.1.1, Page 2-4, 1st Paragraph: Please include a timeline for the construction and full use of the cooling ponds.	Refer to Section 2.1.3.1.3 (*Construction and Operation Schedules*) for an estimate of the construction and operation schedules for the cooling ponds and gypsum stack expansions.

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S-022	Reasonably foreseeable actions	Section 2.1.3.1.2, Page 2-5, 4th Paragraph: The last sentence of this Paragraph, the compacted gypsum hydraulic conductivity, implies to this reader that cooling pond liners may or may not be HDPE. And, it is unacceptable for Simplot to be considering soil liners. Please delete the last sentence.	Simplot has not made any such inference. There will be a synthetic liner for any alternative. No liner for the gypsum stacks or cooling ponds will be constructed without first being approved and permitted by the IDEQ.
S-002	Socioeconomics and environmental justice	A recent study by the American Falls School district revealed that the Simplot Don Plant is by far the largest contributor to the School District's tax assessed value, creating 24.52% of the total tax assessment revenue.	Added the following text to Section 3.18.2.5 (*Community Services*): *The Don Plant is a major contributor to tax revenues in Bannock and Power Counties and associated tax expenditures on public school districts.*
S-003	Socioeconomics and environmental justice	The JR Simplot Smoky Canyon Mine, located the southeast comer of Caribou County, Idaho, employs 230 employees with annual wages and benefits of over $18 million. Smoky Canyon Mine depends upon Lincoln County for over 75% or 173 of the full-time individuals employed there. The main access to the Smoky Canyon Mine is through Lincoln County. In addition to the wages, benefits, scholarships, and donations Smoky Canyon provides to Lincoln County citizens and organizations, the employees of Smoky Canyon serve with us in civic organizations, churches, youth sports and activity programs, and in our schools. The Simplot Smoky Canyon Mine in our area has been in continuous operation for over 40 years. The Company and their employees are part of the DNA of our rural communities. We know them, we trust them, and they have proven their commitment to our county and to the sustainability of our natural resources and economic health. The Smoky Canyon Mine is the sole source of raw phosphate ore to the Simplot Don Manufacturing Plant in Power County, Idaho, which in December 2019, celebrated its 75th anniversary of continuous operations. According to the DEIS, if the No	Added the following text to Section 3.18.4.4 (*Cumulative Effects - No Action Alternative*): *Closure of the Don Plant could also affect operations at the Smoky Canyon Mine and the proposed Dairy Syncline Mine, which supply phosphate ore processed at the Don Plant. Decreased production at these phosphate mines would have similar effects on social and economic conditions in Caribou County, Idaho and in Lincoln County, Wyoming.*

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		Action Alternative is chosen, the Don Plant's capacity to store gypsum on site may reach maximum capacity within 15 years. When/if that were to happen, phosphate ore production at Smoky Canyon Mine, as well as the proposed Dairy Syncline Mine nearby, would be dramatically curtailed or discontinued, provoking an economic and cultural shock wave in Lincoln County.	
S-005	Socioeconomics and environmental justice	The JR Simplot's phosphate operation consisting of the Don Plant in Power County. and the Smoky Canyon Mine in our county has a major economic and cultural impact in four contiguous counties. The Smoky Canyon Mine is the sole source of ore for the Don Plant. While the Smoky Canyon Mine is located in Caribou County, most of the employees live in Lincoln County Wyoming. Likewise, the Simplot Don Plant is located in Power County, yet most of the employees live in Bannock County. If anything threatens the operations of either the Smoky Canyon Mine or the Don Plant, four contiguous counties in Idaho and Wyoming will be significantly impacted.	Added the following text to Section 3.18.4.4 (*Cumulative Effects - No Action Alternative*): *Closure of the Don Plant could also affect operations at the Smoky Canyon Mine and the proposed Dairy Syncline Mine, which supply phosphate ore processed at the Don Plant. Decreased production at these phosphate mines would have similar effects on social and economic conditions in Caribou County, Idaho and in Lincoln County, Wyoming.*
S-017	Socioeconomics and environmental justice	In August of 2019, our school district dedicated the new JR Simplot Elementary School, named after Mr. Simplot in part because the Simplot Company provides nearly 25% of the tax revenues to our schools, our city, county, and the other taxing districts in Power County. That economic structure is threatened by the NO ACTION alternative, which according to the Draft EIS, indicates the Don Plant will not be viable after 2031, due to a lack of storage capacity for gypsum.	Added the following text to Section 3.18.4.4 (*Cumulative Effects - No Action Alternative*): *Under the No Action Alternative, the Don Plant is projected to close by 2031. Loss of employment, tax revenues, and purchases of goods and services associated with the Don Plant would result in social and economic impacts in the region.*
S-017	Socioeconomics and	The plant nutrients, fertilizer, produced at the Simplot Don Plant are shipped and sold in every state west of the Mississippi river. Our farmers and producers in Idaho and the region would suffer catastrophic disruptions without the steady and reliable	Added the following text to Section 3.18.4.4 (*Cumulative Effects - No Action Alternative*): *Under the No Action Alternative, the Don Plant is projected to*

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	environmental justice	flow of crop nutrients produced at the Don Plant. Agriculture is the life-blood of this community; were the Don Plant to close because the gypsum produced by the plant could no longer be stored on site I fear the economic loss throughout the county would be catastrophic.	*close by 2031. Loss of employment, tax revenues, and purchases of goods and services associated with the Don Plant would result in social and economic impacts in the region.*
S-020	Socioeconomics and environmental justice	The DEIS (page 3-98) states the following: "The analysis in the DEIS identifies that under the action alternatives analyzed minority and low-income populations within the CESA would continue to experience disproportionately high adverse impacts." The basis for this comment is unclear. (Footnote 3: The quote identified on page 3-98 continues with …"the two block groups… would continue to experience high levels of exposure to ozone, lead paint, Superfund proximity and wastewater discharge." These "criteria," with one exception, are not relevant to the proposed Land Exchange. There is no ambient monitoring of ozone in the Pocatello/Power County/Ft. Hall Reservation and expected concentration would be below National Ambient Air Quality Standards. The basis for exposure to lead paint has no connection to the land exchange, neither does wastewater discharge.) As described in Appendix A, local air quality meets national air quality standards. Groundwater impacts are local to the Simplot facility and do not flow onto the Fort Hall Reservation or to the east of the Portneuf River. Extensive studies have evaluated other potential risks such as fluoride and radionuclides and determined potential risks are low or not above background conditions. The land exchange alone is not expected to contribute to any additional adverse impacts. However, the analysis conducted in the DEIS regarding the operation of the proposed facilities identified as reasonably foreseeable future actions associated with the land exchange, indicate that there could be a slight increase in phosphorous and arsenic in groundwater resulting in minor, long term and	Revised Section 3.18.4.1.5 (*Environmental Justice*) to describe the magnitude of estimated increases in arsenic and phosphorus. Added text to Section 3.17.2.2 (*Water Resources - Affected Environment*) regarding radionuclides.

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		adverse effects. This assumption was based on the utilization of the liner proposed in the Feasibility Study and analyzed in the DEIS for the gypstack expansion and cooling ponds.	
S-020	Socioeconomics and environmental justice	National ambient air quality standards are met at the Simplot facility and nearby lands, including the Fort Hall Reservation. As shown in Appendix A, air quality has improved over the past two decades and federal air quality standards, which are designed to be protective of public health and the environment, including sub-populations, are met.	Comment noted. Refer to Section 3.2 (*Air Quality and Climate Change*) for a discussion of existing air quality in the analysis area.
S-020	Socioeconomics and environmental justice	Multiple studies have not found any levels of fluoride on the Fort Hall Reservation (Portneuf River bottoms area) that exceed the protection action level established by EPA.	Comment noted. Refer to Section 3.2 (*Air Quality and Climate Change*) for a summary of fluoride monitoring and the annual fluoride in forage reports and associated fluoride sampling target zones.
S-020	Socioeconomics and environmental justice	Groundwater on the Fort Hall Reservation is not impacted by Simplot's operations. No groundwater from Simplot flows onto the Ft. Hall Reservation (see Figure 3). Groundwater impacted by Simplot's operations does surface in the Portneuf River. As described earlier in these comments, actions taken by Simplot is reducing contaminates to groundwater and resulting in improvements to surface water (which includes the Portneuf River flowing onto the Fort Hall Reservation).	This information is already described in the EIS. Refer to Section 3.17 (*Water Resources*) and Appendix H (*Water Resource Assessment*) for additional information on groundwater flow, existing conditions of water resources, and potential impacts of the proposed land exchange and the reasonably foreseeable actions on groundwater and surface water.
S-020	Socioeconomics and environmental justice	Multiple studies have shown that the levels of natural radionuclides in the lower Portneuf (including the Portneuf River bottoms) are not measurably influenced by industrial activities at the FMC and Simplot facilities. There is no indication of a hazardous radiological exposure pathway from surface water, sediment, or people who consume trout from the Portneuf River.	Added text to Section 3.17.2.2 (*Water Resources - Affected Environment*) regarding radionuclides.

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S-021	Socioeconomics and environmental justice	The general public and local families will see a variety of benefits from the exchange. Simplot's Don Plant is the largest contributor to the American Falls School District, providing 24-percent of the district's tax assessed value.	Added the following text to Section 3.18.2.5 (*Community Services*): *The Don Plant is a major contributor to tax revenues in Bannock and Power Counties and associated tax expenditures on public school districts.*
S-022	Socioeconomics and environmental justice	The DEIS states Simplot would spend an estimated $10 million on facility operations and maintenance, and $38.5 million in capital investment towards a new facility, should the No Action Alternative be selected and the proposed land exchange disapproved. Additional information should be provided in the DEIS to supplement the Socioeconomic Technical Report, to identify the full impacts to all counties, if a new facility were to be constructed identifying the proposed location, employment, labor, multipliers and environmental impacts	Refer to Section 3.18.4.1.2 (*Economic Conditions - Cumulative Effects*) of the EIS for a summary of economic effects associated with the No Action Alternative and refer to Appendix G, Section 3.5.2.1 (*No Action Alternative*), for additional detail on economic effects for the No Action Alternative.
S-022	Socioeconomics and environmental justice	Under Executive Order 12898 (1994) and subsequent guidelines adopted by federal agencies, the NEPA process must utilize a heightened sense of judgment for projects that will have a disproportionate impact on protected populations. The DEIS notes that the proposed land exchange will have continued and, under some alternatives, increased effects on populations that include residents of the Fort Hall Reservation. The orders, guidelines, and MOU's between federal agencies speak to a process of developing mitigation measures that are carefully crafted by those affected and address the impacts in a meaningful manner. (Footnote 2: See generally, Environmental Justice, Guidance Under the National Environmental Policy Act, CEQ (1997) https:// www.doi.gov/sites/ doi.gov/ files/uploads/EJ-und er-NEPA.pdf) Tribes have expressed our concerns clearly over the past forty-five years to both the private party proposing this land exchange and the federal agency tasked with facilitating this process. The development of	The BLM is conducting government-to-government consultation with the Tribes regarding the land exchange. Refer to Section 4.3 for a description of tribal consultation. The BLM has limited authority to require and enforce mitigation measures associated with the reasonably foreseeable actions on private lands if the land exchange is approved. Following transfer of the Federal lands into private ownership, Simplot would be responsible for determining final engineering and design details of the gypsum stack expansions and the cooling ponds and permitting these facilities in accordance

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		mitigation measures has not been crafted to address the most serious issues of loss to our Reservation residential land base, impacts to our drinking water, or the air that we breathe over the projected life of these impacts. As one of the impacted communities, it would be appropriate to discuss mitigation measures and their adequacy directly with the Tribes in an official Government to Government Consultation; to date, this has not occurred and mitigation measures were coordinated directly with the proponent of the land exchange instead.	with other Federal and State requirements.
S-022	Socioeconomics and environmental justice	The Tribes have identified significant issues that will not be addressed in the 'mitigation' measures by donating small parcels in the area of impact that may already be impacted by operations at the Don Plant. The issues related to drinking water and the air we breathe for current or projected residents of the Reservation will continue to be unaddressed because the proposed measures were not crafted to alleviate the problems. The analysis demonstrates that this discretionary action will have consequences to the Reservation, our members, and the natural and cultural resources that we rely upon. It is the necessary conclusion for a rational decision maker to be risk averse, and determine that a no-action decision is the best suited for the protected populations from an Environmental Justice standpoint. To do otherwise would allow for the proponent and federal agency to simply "wash their hands" of the continued impacts to our Reservation, leaving our members and their posterity to bear the burden of industrial contamination.	The BLM is conducting government-to-government consultation with the Tribes regarding the land exchange. Refer to Section 4.3 for a description of tribal consultation. The BLM has limited authority to require and enforce mitigation measures associated with the reasonably foreseeable actions on private lands if the land exchange is approved. Following transfer of the Federal lands into private ownership, Simplot would be responsible for determining final engineering and design details of the gypsum stack expansions and the cooling ponds and permitting these facilities in accordance with other Federal and State requirements. In the Final EIS, the BLM has identified Alternative B as the preferred alternative because, among other reasons, voluntary mitigation Parcel B would be offered to be conveyed to the Shoshone-Bannock

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			Tribes to help mitigate for adverse impacts on tribal treaty rights and the Federal land area would be reconfigured so that NRHP-eligible Site 10PR666 is retained in Federal administration, reducing adverse effects on cultural resources.
S-022	Socioeconomics and environmental justice	Section 3.18.2.5, Page 3-89, entire paragraph: Add Shoshone-Bannock Tribes Services to this section.	Change made. Added text to Section 3.18.2.5 (*Community Services*) describing school and health care services specific to the Fort Hall Reservation. The remainder of this section already contains information on law enforcement and fire protection services for the Fort Hall Reservation.
S-022	Socioeconomics and environmental justice	Section 3.18.2.6, Page 3-90: Final Guidance for Incorporating Environmental Justice into NEPA documents found at: https://www.epa.gov/sites/production/files/2015-02/documents/ej_guidance _ nepa _ epa0498.pdf guidelines Section 2.2 suggests the following information be assessed for actions with environmental pollutants including: I) Multiple exposure sources and/or paths for the same pollutant. Source data, including historical, existing, and projected sources, yielding projected effects in concert with that from the resulting proposed action should be analyzed with respect to minority or low-income receptors including cultural, health and occupation-related variables such as: Health data reflective of the community (e.g., abnormal cancer rates, infant and childhood mortality, low birth weight rate, blood-lead levels), Occupational exposures to environmental stresses which may exceed those experienced by the general population and diets, or differential patterns of consumption of natural resource/,	Section 1.2.2 of the EPA guidance cited in the comment states that the guidance "is tailored to EPA's conduct in actions for which EPA must comply with NEPA and where EPA has jurisdiction as a cooperating agency. ***It does not provide guidance related to other federal agencies' actions or for EPA's review of other federal agencies' EISs***." The level of analysis of potential impacts on environmental justice for the land exchange and the reasonably foreseeable actions following the land exchange are adequate and appropriate for this EIS.

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		which may suggest increased exposures to environmental pathways presenting potential health risk. The Shoshone-Bannock Tribes do not see such analysis included in this document and request health data reflective of the Fort Hall community and other surrounding communities.	
S-024	Socioeconomics and environmental justice	The DEIS fails to take a hard look at environmental justice. The DEIS identifies an American Indian minority population on the Fort Hall Reservation and a Hispanic or Latino minority population in Power County. DEIS 3-90. It also notes that Under the Proposed Action, minority and low-income populations . . . would continue to experience disproportionately high adverse impacts. . . The two block groups in Power County and two block groups in the Fort Hall Reservation would continue to experience high levels of exposure to ozone, lead paint, Superfund proximity, and wastewater discharge. Furthermore, the reasonably foreseeable actions on the Federal lands would result in additional adverse impacts on minority and low-income populations within the [socioeconomic study area]. DEIS 3-98. Missing from the DEIS' analysis is any discussion on how the disproportionately high adverse impacts would affect the relevant block groups, or any discussion of the effects on minority and low-income populations from the additional adverse impacts. The point of environmental justice analysis is not simply to identify statistical changes to environmental conditions but to explain how those changes to conditions will impact the lives of the affected populations. The environmental justice analysis here lacks such analysis and thus violates NEPA by failing to take a hard look at the cumulative effects of the proposed land exchange.	Existing disproportionately high adverse impacts on minority populations may result from a wide range of known and unknown factors that are beyond the scope of the actions analyzed in this EIS. Revised Section 3.18.4.1.5 (*Cumulative Effects, Proposed Action, Environmental Justice*) to clarify that the estimated magnitude of effects on water quality resulting from the reasonably foreseeable actions are not anticipated to adversely affect fisheries that are important to the Shoshone-Bannock Tribes relative to baseline water quality conditions and declining trends in total concentrations of various contaminants from ongoing application of source controls and remedial actions at the Don Plant. Current fish consumption advisories for the Portneuf River and the American Falls Reservoir would remain in effect as long as deemed necessary by the Idaho Department of Health and Welfare.

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S-025	Socioeconomics and environmental justice	The taxes on Simplot equipment and land in Power County creates a substantial 24% of the tax revenues for our schools and other taxing districts in the county.	Added the following text to Section 3.18.2.5 (*Community Services*): *The Don Plant is a major contributor to tax revenues in Bannock and Power Counties and associated tax expenditures on public school districts.*
S-008	Tribal Treaty Rights, Trust Responsibilities, and Tribal Resources	The Tribes perspective of the exchange the lands really don't benefit the wildlife. All it does is changes the status of the land in one area from private to federal ownership.	Refer to Section 3.16 (*Fish and Wildlife*) for the analysis of cumulative impacts on wildlife from operation of the Don Plant and the reasonably foreseeable actions.
S-011	Tribal Treaty Rights, Trust Responsibilities, and Tribal Resources	This proposal will negatively impact the Fort Hall Indian Reservation, The permanent Home land of the Shoshone and Bannock tribes and by expanding the existing Superfund site, the human health threats will increase for pocatello and fort hall communites. There is a substantial risk that the toxic and radioactive phosphogypsum waste and leachate will migrate the Reservation water and lands and cause additional damage and risk to the health to the fort hall reservation and surrounding communities. Additional contamination of surface and groundwater may be subjected to an existing IDEQ Consent Order and will affect fish and wildlife on and off the Reservation. Any reduction of federal lands will adversely affect of Shoshone-Bannock Tribal members Treaty Rights. This Land Exchange would constitute a adverse effect of cultural properties and cultural use area known as the singing rocks.	The BLM has revised Section 3.4 (*Tribal Treaty Rights*) and other sections based on other more specific comments and requested revisions. Added text to Section 3.17.2.2 (*Water Resources - Affected Environment*) regarding radionuclides. In the Final EIS, the BLM has identified Alternative B as the preferred alternative because, among other reasons, voluntary mitigation Parcel B would be offered to be conveyed to the Shoshone-Bannock Tribes to help mitigate for adverse impacts on tribal treaty rights and the Federal land area would be reconfigured so that NRHP-eligible Site 10PR666 and the cave dwelling referenced identified during the August 22, 2019, field visit are retained in Federal administration,

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			reducing adverse effects on cultural resources.
S-012	Tribal Treaty Rights, Trust Responsibilities, and Tribal Resources	Expanding the Don Plant's phosphate processing operations will severely impact the Shoshone-Bannock Tribes. The Don Plant, as well as the adjacent land that Simplot has selected for trade, is on the Tribes' Fort Hall Reservation "ceded area." The Tribes retain all rights on ceded lands for hunting, harvesting, wood gathering and livestock grazing. Those rights have been irreparably damaged by the Don Plant's operations. Expanding operations would cause additional damage to those rights.	Refer to Section 3.4 (*Tribal Treaty Rights*) for a description of tribal resources and tribal treaty rights and the analysis of potential impacts on tribal treaty rights from the alternatives and the reasonably foreseeable actions.
S-019	Tribal Treaty Rights, Trust Responsibilities, and Tribal Resources	As noted in the Shoshone-Bannock Tribe's comments, in transferring the BLM land to Simplot, the BLM land would no longer be subject to federal laws and executive orders protecting tribal cultural resources, including the Native American Graves Protection and Repatriation Act, the National Historic Preservation Act, the Archaeological Resources Protection Act, FLPMA, NEPA, and Executive Orders 12898 and 13007. Consequently, Simplot would have no commitment to provide information about activities on this land and have no obligation to protect places of cultural and historical significance to the Tribes or the public. In conclusion, USRT opposes the proposed land exchange and is in support of the Shoshone-Bannock tribe's position with the affirmation that the land exchange would result in environmental degradation and negatively impact tribal natural and cultural resources.	Refer to Section 3.4.4 (*Tribal Treaty Rights - Cumulative Effects*) and Section 3.3.4 (*Cultural Resources - Cumulative Effects*) for a description of impacts on tribes from transfer of Federal lands out of Federal administration. Cultural resource surveys have been conducted on all lands that would be leaving Federal administration and the BLM is working with the State Historic Preservation Officer and other consulting parties to address potential impacts on historic properties through the Section 106 process. In the Final EIS, the BLM has identified Alternative B as the preferred alternative because, among other reasons, voluntary mitigation Parcel B would be offered to be conveyed to the Shoshone-Bannock Tribes to help mitigate for adverse impacts on tribal treaty rights and the Federal land area would be reconfigured

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			so that NRHP-eligible Site 10PR666 is retained in Federal administration, reducing adverse effects on cultural resources.
S-019	Tribal Treaty Rights, Trust Responsibilities, and Tribal Resources	USRT supports the Shoshone-Bannock Tribes in their recognition that the BLM land and resources located on the land has substantive historic and present-day ties to the Tribe's culture and history. This landscape includes numerous archaeological sites, burial sites, spiritual sites, campsites, trails, healing locations, battlegrounds, and hunting, fishing and gathering locations, as substantiated in archaeological reports prepared by BLM contractors, who identified at least eight different types of cultural properties in the area. In addition, in their April 2012 Record of Decision and Pocatello Field Office Approved Resource Management Plan, the land area was identified by the BLM as a recognized area of importance as an acquisition priority area. It is also recognized in that same document, under Figure 9, Land Tenure Adjustment Zones, as a Zone 3, which is to "consolidate ownership, maintain overall public land acreage." This transfer would infringe upon the vested rights of the Tribes and tribal members seeking to exercise treaty rights.	Refer to Section 3.3 (*Cultural Resources*) and Section 3.4 (*Tribal Treaty Rights*) for a description of existing conditions and potential impacts on the resources referenced in the comment.
S-022	Tribal Treaty Rights, Trust Responsibilities, and Tribal Resources	The land that would be given to Simplot lies within the original Reservation, and the Tribes have and maintain significant historical and cultural ties to this land, including the right to exercise Treaty hunting, fishing and gathering rights. By transferring these federal lands to Simplot, it will be not be subject to federal laws and executive orders protecting Tribal cultural resources, including the Native American Graves Protection and Repatriation Act, the National Historic Preservation Act, the Archaeological Resources Protection Act, American Indian Religious Freedom Act (AIRFA), FLPMA, NEPA,	Refer to Section 3.4 (*Tribal Treaty Rights*) for a description of tribal resources and tribal treaty rights and the analysis of potential impacts on tribal treaty rights from the alternatives and the reasonably foreseeable actions.

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		and Executive Orders 12898 and 13007. Accordingly, Simplot would have no obligation to protect places of cultural and historical significance to the Tribes or the public on the land and no obligation to provide information about its activities on its proposed hazardous waste dump.	
S-022	Tribal Treaty Rights, Trust Responsibilities, and Tribal Resources	The Fort Bridger Treaty of 1868 contains 13 Articles and several related to this particular land exchange that needs to be characterized for the Final EIS and Record of Decision. Of utmost importance with regard to this land exchange is the “absolute and undisturbed use and occupation” of our Fort Hall Reservation as guaranteed in Article II of the Fort Bridger Treaty. This is critical to understand because the reference to off-reservation Treaty rights reserved in Article IV begins by stating that “(the Tribes] will make said reservation(s) their permanent home. and they will make no permanent settlement elsewhere.” As a political entity and entire people, the Tribes are locked into this land base in perpetuity; therefore, protecting the lands, water, and air of this Reservation for residents and members is the most critical component of our policies and regulatory framework. The Tribes are not willing to accept long-term or persistent risks on our lands, to our waters, or the air the membership breathes; particularly as a result of a discretionary land exchange that will allow for the growth of contamination that has been demonstrated to be hazardous to human health for generations to come. The Tribes are not in agreement with the risks that will persist long after this exchange is completed and have directly consulted on this issue for over twenty years. Article V describes the trust relationship and the obligation of the Department of Interior, via the Bureau of Indian Affairs and BLM, to consider our complaints against potential damages to our Reservation. Article V of the Treaty requires a “prompt and diligent inquiry into such matters of	Refer to Sections 3.4.3 (*Tribal Treaty Rights, Trust Responsibilities, and Tribal Resources – Direct and Indirect Effects*) and 3.4.4 (*Tribal Treaty Rights, Trust Responsibilities, and Tribal Resources – Cumulative Effects*), which describe impacts on tribal treaty rights, trust responsibilities, and tribal resources. Refer to Sections 3.2.3 (*Air Quality and Climate Change – Direct and Indirect Effects*) and 3.2.4 (*Air Quality and Climate Change – Cumulative Effects*), which describe impacts on air resources. Refer to Sections 3.17.2 (*Water Resources – Direct and Indirect Effects*) and 3.17.4 (*Water Resources – Cumulative Effects*), which describe impacts on water resources. Article V of the Fort Bridger Treaty States that: “The United States agrees that the agent for said Indians shall in the future make his home at the agency building on the Shoshone reservation, but shall direct and supervise affairs on the Bannack reservation; and shall keep an office open at all times for the purpose of prompt and diligent inquiry into such matters of

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		complaint by and against the Indians" and a finding on whether there is a "depredation on person or property" that would be compensable under law and otherwise consistent with the provisions of our Treaty; including whether this would impact our permanent homeland. To date, we have not seen a finding that this land exchange is in our best interests or correspondence between these sister Department of Interior agencies that would lead us to believe that this detailed fact-finding inquiry has been undertaken. At the heart of this land exchange is the perception of exigency presented by a private company seeking an accommodation to continue industrial operations for a short period of time, and our people who will reside on this land forever. It remains the position of the Tribes that the highest and best use of this land base will be to support the residential development in each of our five districts for future generations. Expansion of industrial operations, which have resulted in an existing and unremediated superfund site, threatens and directly impacts our health and welfare, economic security, and ability to plan for any new residences in those areas due to enhanced risks to groundwater, air, and other pollutants beyond the foreseeable future. Consistent with our commitment to remain on this Reservation our membership requires a setting that is relatively free from contaminants and will continue to be a healthy place for our future generations to thrive. Facilitating the continued operation of the Don Plant also extends the contamination to the Fort Hall Bottoms Area, which is a vital location for Tribal member subsistence hunting, fishing, and gathering, as well as important cultural practices.	complaint by and against the Indians as may be presented for investigation under the provisions of their treaty stipulations, as also for the faithful discharge of other duties enjoined by law. In all cases of depredation on person or property he shall cause the evidence to be taken in writing and forwarded, together with his finding, to the Commissioner of Indian Affairs, whose decision shall be binding on the parties to this treaty." The BLM interprets that Article V of the Fort Hall Bridger Treaty describes the duties and responsibilities of the Bureau of Indian Affairs Fort Hall Agency Superintendent.

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S-022	Tribal Treaty Rights, Trust Responsibilities, and Tribal Resources	The proposed lands to be exchanged include land in which the Tribes have a reversionary ownership interest. To give formal notice of its interest and litigation related thereto, the Tribes filed a Notice of Lis Pendens and recorded the Notice in Power and Bannock counties on November 26, 2019. The Notice officially advises all parties about the Tribes' interest in the land and that related litigation is currently pending in Shoshone-Bannock Tribes v. United States of America, et al., Case No. 4:18-CV-00285-DCN. Among other parcels, the Notice identifies " the northeastern parcel corner of Section 17, Wl/2, NWI/4, Wl/2S Wl/4, Township 6 South, Range 34 East Boise Meridian, Bannock County, which is within the 1882 railroad right of way, as land in which the Tribes have a reversionary ownership interest protected by the Act of 1882, 22 Stat. 148, and the Act of 1888, 25 Stat. 452. By those Acts, Congress affirmed and protected the Tribes' reversionary interest in the subject land. The Notice was sent via certified mail to Simplot's Registered Agent on December 31 and via email to in-house counsel on January 17, 2020.	The BLM recognizes ongoing litigation associated with the area identified in this comment (approximately 1.37 total acres within the Federal land area); however, the land is currently administered by the BLM and available for inclusion in the land exchange.
S-022	Tribal Treaty Rights, Trust Responsibilities, and Tribal Resources	Volume 3, Appendix H 2.5.3.4, Cultural Services, Page H-28: Tribal Cultural Services should not be mistaken as part of recreational services as per BLM's Recreational Management. The Tribes request a statement be added here that these do not imply specific Shoshone-Bannock Tribes Cultural and Customary activities.	Added text to Appendix G, Section 2.5.3.4, based on this comment.
S-022	Tribal Treaty Rights, Trust Responsibilities, and Tribal Resources	The Shoshone-Bannock Tribes (Tribes), a federally recognized tribe and adjacent landowner, unequivocally oppose the proposed land exchange between the Bureau of Land Management (BLM) and J.R. Simplot Company (Simplot) and request that BLM selects the No Action Alternative described in the Draft Environmental Impact Statement (DEIS). The DEIS fails to evaluate the long-term impacts to the permanent home of	The EIS includes an appropriate scale of analysis of impacts on tribal resources and tribal treaty rights from the land exchange and also includes substantial information on potential cumulative impacts that could result from the

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		the Tribes and the residents of the Fort Hall Reservation (Reservation).	reasonably foreseeable actions on the Federal lands.
S-022	Tribal Treaty Rights, Trust Responsibilities, and Tribal Resources	The proposed federal land exchange is part of the Tribes' traditional cultural landscape and include likely burial sites, spiritual sites, spring sites, waterways, archaeological sites, campsites, trails, healing locations, battlegrounds and hunting, and fishing and gathering locations (some of which are shown in Attachment #2). While archaeological reports prepared by BLM contractors identified different types of cultural properties in the area, the Tribes consider the area as a whole to be a significant traditional cultural landscape that provides a picture of our ancestors' relationship to the area.	Refer to Section 3.4.2.2 (*Tribal Treaty Rights and Tribal Resources*), which describes the importance of the Federal lands to the Tribes, including text that indicates: *Much of the landscape itself figures prominently in the identity and traditions of the native groups, and sacred places are not necessarily defined by archaeological remains.*
S-022	Tribal Treaty Rights, Trust Responsibilities, and Tribal Resources	Within the Cultural Resource Inventory several precontact sites were listed as ineligible to the National Register of Historic Places. One of those sites has cultural significance as a smoke signal resource related from a member of his descendants that Chief Pocatello used this area. This is evident of a visual resource	Added the following text to Section 3.3.2 (*Cultural Resources – Affected Environment*): *While many of the cultural sites are not recommended as eligible for listing on the NRHP, they do provide important cultural history and significance for the Shoshone-Bannock Tribes.* Under Alternative B, the BLM's preferred alternative, NRHP-eligible Site 10PR666, NRHP-ineligible Sites 10PR93 and 10PR978 (SB-02-CLC), and the cave dwelling in the Wind Canyon cliffs area that is culturally significant to the Shoshone-Bannock Tribes would be retained in Federal ownership and, therefore, would not be damaged or destroyed from construction of the reasonably foreseeable actions.

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S-022	Tribal Treaty Rights, Trust Responsibilities, and Tribal Resources	After conducting an exhaustive title research on the federal lands that would be transferred to Simplot, the Tribes have concluded that this land is within the ceded lands of the 1900 Cession Agreement ("Ceded Lands") and have potential issues with the title that could preclude the exchange. In 1867, President Johnson established the Reservation by Executive Order; the following year the 1868 Fort Bridger Treaty ("Treaty") was negotiated and affirmed by the U.S. Senate in February 1869, reaffirming the Reservation as the Tribes' permanent home. In signing our Treaty, our people reserved the right to exercise off-reservation hunting, gathering and fishing rights. Subsequently, Tribes entered into a series of cession agreements with the United States and, in 1900 ceded 418,560 acres of the Reservation to the federal government. Tribes maintain our Treaty rights on both current Reservation and Ceded Lands. As part of the 1900 Cession Agreement, the Tribes retain certain rights on our Ceded Lands. Article IV of the 1900 Cession Agreement states, "So long as any of the lands ceded, granted, and relinquished under this treaty remain part of the public domain, Indians belong to the above mentioned tribes, and living on the reduced reservation, shall have the right, without any change, therefore, to cut timber for their own use, but not for sale, and to pasture, their livestock on said public lands, and to hunt thereon and to fish in the streams thereof." Further, the Tribes expressly reserved specific usufructuary rights for lands remaining in the public domain, including retained priority rights to hunt, fish, gather, graze, and cut timber for personal use. In 1972, the Idaho Supreme Court, in State v. Tinno, affirmed that the Tribes' hunting, fishing, and gathering rights extend to any unoccupied off-Reservation federal lands that are part of the aboriginal (or pre-Treaty) domain of the Shoshones and the Bannocks. Further,	Investigation and resolution of title disputes is beyond the scope of this EIS, and will ultimately be determined by the courts, or by the Department of the Interior Solicitor's Office pursuant to Department of Justice title standards.

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		the U.S District Court in Swim v. Bergland affirmed these Tribal rights. These rights are not "privileges" given to the Tribes by the U.S. but instead are property interests that the Tribes reserved when we entered into our Treaty with the U.S. The transfer of the federal lands to a private company would violate our Treaty rights, not to mention potentially our ownership rights. The Tribes retain rights on the federal lands and would lose these rights on this land if transferred to Simplot.	
S-022	Tribal Treaty Rights, Trust Responsibilities, and Tribal Resources	The federal lands and resources located on it are an integral component of the Tribes' contemporary subsistence and traditional cultural practices. Tribal members actively hunt on this land and maintain traditional and cultural practices on it. In addition, this land likely contains burial sites, as discussed within the Cultural Resource section. The BLM recognizes the importance of these lands and has identified it as an acquisition priority area in their April 2012 Record of Decision and Pocatello Field Office Approved Resource Management Plan. It is also recognized in that same document, under Figure 9, Land Tenure Adjustment Zones, as a Zone 3, which is to "consolidate ownership, maintain overall public land acreage." This transfer would infringe upon the vested rights of the Tribes and Tribal members seeking to exercise Treaty Rights. The Tribes have long stated our opposition to federal land transfers, exchanges, or sales on lands within the Tribes' original Reservation, which includes the Tribes' current Reservation and ceded lands. Furthermore, BLM Parcels RPD04l 9-02 and Bannock County parcel are NOT included in Appendix D Land identified for Disposal under FLTFA in the 2012 BLM Pocatello Office Approved Resource Management Plan (RMP).	Refer to Section 3.4.2.2 (*Tribal Treaty Rights and Tribal Resources*), which describes the importance of the Federal lands to the Shoshone-Bannock Tribes, including tribal resources and tribal treaty rights. The Federal lands included in the land exchange are identified as Zone 3 in the Pocatello Resource Management Plan, which are available for disposal by exchange.

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S-020	Water resources	The Feasibility Study also includes a detailed description of the liner design for the proposed gypstack expansion. This liner design was utilized to analyze potential impacts to resources from the reasonably foreseeable future actions of expanding the gypstack and construction of the proposed cooling ponds in the DEIS and is consistent with the constructed design at the existing gypstack. This liner design was recommended by Ardaman & Associates, Inc., December 2008. (Ardaman 2009) The design document was incorporated into the Remedial Action Plan (RAP) per the requirements of a Voluntary Consent Order /Compliance agreement (VCO/CA) between IDEQ and Simplot. (IDEQ 2008) The RAP was approved by IDEQ on February 2, 2010. The RAP was also intended to meet the requirements of the 2010 Interim Amendment to the Record of Decision for the EMF Superfund Site Simplot Plant Operable Unit Pocatello, Idaho. (EPA 2010). Any liner approved in the future through state and federal permitting processes, will meet or exceed the impermeability and durability standards of the current liner approved by the Environmental Protection Agency (EPA). The entire receiving surface of the existing gypstack was lined utilizing this approved liner design. This project began in 2009 and was completed in 2017. As shown in Figure 1, the lining of the gypsum stack along with the groundwater extraction system has resulted in a significant reduction in phosphorus concentrations in the Portneuf River.	Added the following text to Section 2.1.3.1.2 (*Future Gypsum Stack Expansion*): *Any liner approved in the future through State and Federal permitting processes will meet or exceed the impermeability and durability standards of the current liner approved by the IDEQ. Refer to Appendix E (Feasibility Study) for additional conceptual design information on the liner system for the proposed gypsum stack expansions.*
S-020	Water resources	According to the DEIS, operation of the cooling ponds and gypstack expansions on the Federal lands could result in minor incremental additions of phosphorous and arsenic loading due to the potential leakage of leachate through the liners of these facilities. The modeling and analysis presented Water Resource Technical Report) are based on an approved conceptual site model and groundwater flux calculations used since 2009 in	Revised and added text to Section 3.17.4.1 (*Water Resources, Cumulative Effects, Proposed Action*) further quantifying estimated incremental and cumulative effects from liner leakage within the context of ongoing water quality trends.

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		support of requirements in the 2008 Voluntary Consent Order. The modeling and analysis is very robust, leveraging groundwater chemistry and water level data from a network of 171 groundwater monitoring wells, 13 active groundwater extraction wells, 3 water supply wells, 2 spring locations and 2 locations on the Portneuf River. The potential predicted increase in the incremental concentration of arsenic peaks at less than 0.00009 mg/L in the processing facility area. Predicted potential incremental concentrations of phosphorus peak at less than 0.03 mg/L in the western processing facility area and less than 0.05 mg/L in the eastern processing facility area. Incremental concentrations are predicted to remain at these levels until plant shutdown. The phosphorous concentration in the Portneuf River at the Siphon Road compliance point is predicted to potentially increase by only 0.000156 mg/L. The incremental increases of arsenic and phosphorus at points of compliance are so small that, while the increase can be calculated, the concentrations will not be detectable by analytical methods. The rationale for how the calculations, which focus on only the two primary chemicals of concern in seepage water, phosphorus and arsenic, are representative of all COCs is as follows: Phosphorus is present in high concentration (approximately 4000 mg/L) in the decant water and seepage has resulted in inflow to the Portenuf River. Nitrogen compounds are not present in significant concentration in the decant water. Arsenic is also present in high concentration (approximately 0.4 mg/L) in decant water. Arsenic serves as an indicator analyte for other metals and always occurs in groundwater impacted by gypsum stack seepage.	

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S-020	Water resources	There is a robust groundwater and surface water monitoring program at the Don Plant that will be continued and it is reasonable to expect it will be expanded if any of the RFA's are subsequently approved. For example, each quarter, groundwater level measurements are collected at 200 monitoring locations, including 137 upper zone groundwater wells, 48 lower zone groundwater wells, 5 multilevel groundwater wells and 10 bedrock wells, in addition to 75 other groundwater locations at the FMC site. Two locations at the Portneuf River are also gauged for flow stage quarterly. Groundwater samples are collected quarterly from 142 monitoring locations, including 97 upper zone wells, 35 lower zone wells, 5 multilevel wells, 3 bedrock wells and 2 springs (Batiste Road Spring and Batiste Spring) near the Portneuf River. Groundwater samples are also collected quarterly from 3 upper zone wells and 2 bedrock wells at the FMC site. Quarterly groundwater samples from most monitoring locations are analyzed for a list of 14 indicator analytes. A selected group of compliance monitoring locations adjacent to the Portneuf River are analyzed for an expanded list of 28 analytes including the indicator parameters in addition to metals.	Section 3.17.2.2 (*Surface Water and Groundwater Quality*) was revised to include additional information on water monitoring and to refer to the Feasibility Study for more information on monitoring.
S-020	Water resources	Additional monitoring is required specific to the phosphoric acid plant area (PAP) as well. This includes groundwater data that is collected on a more frequent basis from a network of 42 monitoring and extraction wells. This monitoring includes monthly in-situ pH readings from the network of 42 wells as well as weekly or monthly sample analysis from selected wells based on groundwater pH at the time of sampling. PAP area samples are analyzed for either an indicator list of 10 analytes, or an expanded list of 26 analytes, including metals.	Added the following text to Section 3.17.2.2 (*Surface Water and Groundwater Quality*): *In addition, Simplot conducts monitoring specific to the phosphoric acid plant area including monitoring groundwater data that are collected on a frequent basis from a network of 42 monitoring and extraction wells.*

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S-020	Water resources	CERCLA remedies implemented by the J.R. Simplot Company over the past couple of decades have resulted in improvements in groundwater and surface water. Groundwater samples from 13 compliance wells and 2 springs are analyzed quarterly for antimony, beryllium, boron, cadmium, chromium, manganese, mercury, nickel, selenium, thallium, uranium, vanadium and zinc and recent (2019 Q3) results for all constituents except boron and uranium are below detection limits. Uranium and boron concentrations are below respective Risk-based Concentration (RBC) and Maximum Contaminant Level (MCL) and near detection limits. Compliance wells and springs were also analyzed for radionuclides gross alpha, gross beta, radium 226 and radium 228 as part of the 2019 Q2 sampling event. All radium concentrations were below detection limits and all gross alpha concentrations were below 10 pCi/L (MCL = 15 pCi/L). Appendix A has further information on trends of contaminants of concern in groundwater and surface water	Added text in Section 3.17.2.2 (*Surface Water and Groundwater Quality*) based on this comment and also included information on arsenic, fluoride, nitrate, phosphorus, and vanadium.
S-022	Water resources	According to the “Groundwater/Surface Water Remedy 2018 Annual Report Simplot Don Plant” dated March 2019, there is a significant amount of contamination bypassing the extraction system at the base of the phosphogypsum stack. A quantitative summary of the effectiveness of the groundwater extraction system in 2018 from the groundwater from all sources including the gypsum stack and Phosphoric Acid Plant revealed that: * 2.14 lb/day of arsenic is leaking from the gypsum stack * 25,739 lb/day of sulfate is leaking from the gypsum stack * 2,520 lb/day of phosphorus is leaking from the gypsum stack * 0.95 lb/day of arsenic is estimated to bypass the extraction wells and flow off-site * 13,849 lb/day of sulfate is estimated to bypass the extraction wells and flow off-site * 1,335 lb/day of phosphorus is estimated to bypass the extraction wells and flow off-site Even after lining the gypsum stack, years of	The EIS considers the performance of the groundwater/surface water remedy for the Simplot Don Plant at the EMF Site, which includes lining the existing gypsum stacks, source controls in the Phosphoric Acid Plant area, and groundwater extraction. The EIS also provides data to support the determination that the incremental impacts on groundwater contamination from the expansion of the gypsum stack would be minor. Section 3.17.4.1 discusses the predicted impacts of operation of the cooling ponds and gypsum stack expansions. Appendix H (*Water Resource Technical Report*)

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		ongoing upkeep and maintenance at the Simplot Don Plant including replacement of leaking sumps and pipes and the operation of an extraction system that removes contaminated water from the underlying aquifer. Past and present, remediation efforts have not been enough to prevent contamination from entering the Portneuf River and flowing onto the Reservation. Conversely, BLM characterizes the impacts to groundwater contamination from the expansion of the gypstack as minor without providing data to support this determination. The Tribes request the BLM to identify how they have determined a mere minor impact from the expansion of the gypstack and include evaluation of all contaminants expected to be affected the cumulative impacts of the action. The DEIS fails to consider these important aspects of the proposal land exchange.	provides additional detail on the how those impacts were determined.
S-022	Water resources	Any ponds that are constructed shall be fully and doubly lined with flexible membrane material, designed for leachate collection, and impermeable. This DEIS lacks design details for the ponds, leaving it open as to how they will be constructed.	As described in Section 2.5.6 (*Alternate Design Options for the Gypsum Stacks and Cooling Ponds*), requirements for a more specific review of design options for the cooling ponds and expanded gypsum stacks that may be necessary under existing or future consent orders with the IDEQ and/or EPA are beyond the scope of this EIS because these facilities would be on private land following the land exchange. Following transfer of the Federal lands into private ownership, Simplot would be responsible for determining final engineering and design details of the gypsum stack expansions and the cooling ponds and permitting

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			these facilities in accordance with other Federal and State requirements.
S-022	Water resources	After review of available literature, the detailed geology north of Howard Mountain onto Michaud Flats and the Snake River Plain is poorly understood and incompletely mapped.	The Draft EIS describes hydrology and groundwater flow based on available references and resources. To date, the BLM has not received any specific references or studies that support the claims made in this comment.
S-022	Water resources	For the Proposed Action/Alternative A, surface water drainage and groundwater flow from the area proposed for land exchange is to the north toward the Eastern Michaud Flats Superfund Site. These flows will affect the current assessment and remedial activities occurring at the Superfund site, increasing contaminant loads to the current systems and perhaps changing groundwater flow dynamics. This may require changes to the Records of Decision, site investigations, and remedial actions for the two facilities that comprise the Superfund Site	Any potential changes in remedial actions following the land exchange would be coordinated between the appropriate entities.
S-022	Water resources	Adding contamination to an existing Superfund Site by increasing the phosphorous and arsenic loading to groundwater, thus increasing the load addressed by the current extraction system at the base of the existing gypstack and potentially increasing the duration of the remedy and the maximum concentrations is an issue that EPA should evaluate and approve/disapprove, from a CERCLA standpoint.	Revised and added text to Section 3.17.4.1 (*Water Resources, Cumulative Effects, Proposed Action*) further quantifying estimated incremental and cumulative effects from liner leakage within the context of ongoing water quality trends.
S-022	Water resources	Section 3.17.1.2, 3-76, 2nd bullet: "Historical releases from the Don Plant contain many chemical constituents; however, this analysis focuses on phosphorus and arsenic because they currently exceed regulatory limits and are constituents of greatest concern for environmental consequences associated with the reasonably foreseeable actions on the federal lands,	Section 3.17 (*Water Resources*) has been revised to include more information on other contaminants of concern. Also, refer to Tables 5-7 and Table 5-8 in Appendix H for additional information on modeled contributions to concentrations

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		including being the principal contaminants found in gypsum stack leachate." Provide how you came to determine phosphorus and arsenic are the constituents of greatest concern and principal contaminants found in gypsum stack leachate. Table 3-8 on pg. 3-29 provides a list of 33 contaminants in gypsum stack slurry. All contaminants that leach through the gypsum stack are of concern to the Shoshone-Bannock Tribes. Amend this information to include all contaminants that have leached through the gypsum stack into soils and groundwater.	of other contaminants of concern from the reasonably foreseeable actions. As indicated in the assumption referenced in this comment, arsenic and phosphorus are the focus of the analysis because they currently exceed regulatory limits, are the contaminants that occur in the highest concentrations in the gypsum stack slurry, and are the most likely to result in impacts on water resources. While arsenic and phosphorus are the focus of the analysis, other contaminants are described in Appendix H (*Water Assessment Report*) and in the various references referred to in the EIS.
S-022	Water resources	Section 3.17.2.1, Page 3-77, 4th Paragraph: It is not agreed that all horizontal groundwater flow across the Eastern Michaud Flats Superfund Site discharges at Batiste Springs. There is likely a component of groundwater flow to the north and slightly northwest toward the Snake River. Please amend this section to reflect the above.	The referenced text is based on information presented in the EPA Record of Decision and EIS for the EMF Site (EPA 1998). To date, this represents the best available existing information on groundwater flow. The BLM has not received any further documentation or references to support the revision requested in this comment.
S-022	Water resources	Section 3.17.2.2, Page 3-81, 1st Paragraph: "The primary constituents of concern are arsenic, phosphorus, nitrate cadmium, chromium, sulfate, and pH originating from the gypsum stack and process area." This statement is misleading and inaccurate. This statement is not representative of concerns by the Shoshone-Bannock Tribes. List out all contaminates that are leaching from the gypsum stack, identified in Table 3-8 on pg. 3-29. Further, if this statement	Section 3.17 (*Water Resources*) has been revised to include more information on other contaminants of concern. Also, refer to Table 5-7 and Table 5-8 in Appendix H for additional information on modeled contribution to concentrations of other contaminants of concern from the reasonably foreseeable actions.

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		remains in the document, it should be noted who have determined these are the primary constituents of concern and specifically identify the Tribes are concerned about all contaminants leaching from the gypsum stack, entering the soils and leaching into the groundwater that enters the Fort Hall Reservation.	
S-022	Water resources	Section 3.17.2.2, Page 3-81, 6th and 7th Paragraph: Statements in the Paragraph are misleading. Amend this discussion to identify that while Simplot does not sample all constituents of concern regularly cadmium, chromium, nickel, selenium, zinc, boron, fluoride nitrate, vanadium and uranium are known to leach through the gypsum stack in addition to phosphorus and arsenic and have been detected in downgradient monitoring wells. Include the current estimates of gypsum stack leakage; over 700 gallons per day including: arsenic 2.14 lbs/ day, sulfate 25,739 lbs/ day and phosphorus at 2,520 lbs/day After remedial efforts within the plant including extraction there is well over 1335 pounds per day of phosphorus that goes to the Portneuf River. Please reference the JR Simplot 2018 Annual Report.	As indicated in Section 3.17.1.2, historical releases from the Don Plant contain many chemical constituents; however, this analysis focuses on phosphorous and arsenic because they currently exceed regulatory limits and are the constituents of greatest concern for environmental consequences associated with the reasonably foreseeable actions on the Federal lands, including being the principal contaminants found in gypsum stack leachate. Added the following text to Section 3.17.2.2: *"Based on modeling estimates, the lining of the gypsum stacks reduced the phosphorus load to the environment from 42,441 pounds per day in 2010 to 7,875 pounds per day in 2018 (Formation Environmental 2019c)."* Table 3-2 in Appendix H lists the arsenic and phosphate loads in target capture zone groundwater referenced in the comment. Section 3.5.4.1 (*Geotechnical - Cumulative Effects*) presents monitored concentrations of other constituents in

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			the gypsum stack slurry and the cooling tower water.
S-022	Water resources	Section 3.17.4, Page 3-83 and 3-84, Paragraph 1, Paragraph 7 pg: Cumulative Effects- Define what is meant by "minor incremental additions of phosphorus and arsenic loading due to leakage of leachate through the liner." Define the effects from other contaminants expected to leak through the liner including all known contaminants, listed in table 3-8, on pg. 3-29. In addition, provide known human health effects and ecological effects from exposure to these contaminants that are expected to leak through the liner, enter the soils and groundwater and flow onto the Fort Hall Reservation. The following website offer insight: https://www .ncbi.nlm.nih.gov/pmc/articles/PMC4 l 44270 https://www .epa.gov/sites/production/ fi les/2014-11/documents/human _health_effects. Pdf	Revised and added text to Section 3.17.4.1 (*Water Resources, Cumulative Effects, Proposed Action*) further quantifying estimated incremental and cumulative effects from liner leakage within the context of ongoing water quality trends. Further clarified estimated magnitude of effects on tribes in Section 3.4.4 (*Tribal Treaty Rights, Trust Responsibilities, and Tribal Resources, Cumulative Effects*) and Section 3.18.4 (*Socioeconomics and Environmental Justice, Cumulative Effects*).
S-022	Water resources	Section 3.17.4.1, Page 3-85, 5th Paragraph: If these statements are made in the DEIS, "The Portneuf River enters Fort Hall Reservation fewer than 2 miles downstream from Batiste Springs, Because site-affected groundwater enters the Portneuf River within a small stretch of the river between Swanson Road Spring and Batiste Spring, water quality impacts in the river at Fort Hall would be similar to the 5th Para. water quality impacts at Batiste Spring.", then all water quality data for the river downstream of the Simplot Facility (including arsenic) must be presented in this DEIS. Presenting only phosphorous data in this DEIS is unacceptable and misleading. Present the entire history of all of the COC data for the river as affected by Simplot contamination in this document, regardless of whether these data meet regulatory levels.	The remedial investigation report (Bechtel 1996) documented that "the FMC and Simplot processing facilities had no significant impact on ecological receptors associated with the Portneuf River and the American Falls Reservoir"; "The EMF facilities have had no measurable effect on the Portneuf River, with two exceptions: (1) there was a slight, localized increase in sulfate concentrations potentially related to influent site-affected groundwater, and (2) sediments collected at the FMC outfall were found to contain traces of phosphate ore and precipitator dust"; and "The EMF facilities have not caused adverse impacts on surface water

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			quality." The 2010 Interim Amendment to the Record of Decision (EPA 2010) modified the remedy "to reduce phosphorus loading to groundwater and prevent the migration of COCs above MCLs or RBCs into the Portneuf River." The EPA also determined that "Although several COCs have been detected in groundwater beneath the Simplot OU, meeting MCLs and RBCs for arsenic and phosphorus (measured as total phosphorus or dissolved orthophosphorus) in groundwater at their respective points of compliance will sufficiently reduce or eliminate risks to human health and the environment from all other COCs." Figure 3-5 in Appendix H (*Water Resource Technical Report*) shows the decline in phosphorus concentration in the Portneuf River. Text has been added to Section 3.17.2.2 (*Surface Water and Groundwater Quality*) to provide more baseline information on surface water and groundwater quality.
S-022	Water resources	Section 3.17.4.1, Page 3-85, 7th Paragraph: The following statement is inaccurate and needs to be updated to the current approved Portneuf River Total Maximum Daily Load, "The 2008 Voluntary Consent Order and Compliance Agreement mirror the total maximum daily limits and require reduction of the annual median concentration of phosphorus in the Portneuf River at the Siphon 7th para. Road bridge to 0.075 mg/L by the	In Section 3.17.2.2, the following text has been added: *The Portneuf River Watershed Advisory Group proposed total phosphorus concentration targets of 0.125 mg/L during the high-flow months of March through June and 0.07 mg/L*

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		end of2021." The 2010 Portneuf TMDL Revision and Addendum called for high flow (0.125 mg/L) and a low flow (0.70 mg/L) total phosphorus target. The high flow months are set from March-June and the remaining months of the year are considered low flow. If you were to convert this to an annual median concentration the maximum allowable concentration would be 0.07 mg/L.	*during the low-flow months of July through February (IDEQ 2010).*
S-022	Water resources	Volume 2, Appendix D 4.1.3, Page 4-1, Paragraph 2: Simplot should fully evaluate all hybrid options and provide results of the full evaluation prior to a DEIS decision.	Refer to Section 2.5.2 (*Fluoride Reduction Alternatives*) for a description of other fluoride reduction alternatives considered and the rationale for eliminating them from further detailed analysis. Requirements for a more specific review of design options for the cooling ponds and expanded gypsum stacks that may be necessary under existing or future consent orders with the IDEQ and/or EPA are beyond the scope of this EIS because these facilities would be on private land following the land exchange. Following transfer of the Federal lands into private ownership, Simplot would be responsible for determining final engineering and design details of the gypsum stack expansions and the cooling ponds and permitting these facilities in accordance with other Federal and State requirements.
S-022	Water resources	Volume 2, Appendix A, Page 3, Entire Section: Cooling Pond Concepts- Simplot and the CO entered into with DEQ for ongoing and continued violations of their permit conditions should have no bearing on the EIS decision. Simplot has also	Refer to Section 2.5 (*Alternatives Eliminated from Further Analysis*) for information on alternatives that were considered. Requirements for a more

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		entered into a CO with the USEPA for ongoing groundwater contamination and human health and environmental impacts from their releases. All impacts should be considered in lieu of one particular CO. While Simplot has assessed alternatives and prefers lining of cooling ponds to remove heat load from the phosphoric acid plant is the preferred approach, no specific information is provided on the cost or the efficacy of all alternatives. Provide information on the efficacy and cost for all alternatives including air filters for the cooling towers.	specific review of design options for the cooling ponds and expanded gypsum stacks that may be necessary under existing or future consent orders with the IDEQ and/or EPA are beyond the scope of this EIS because these facilities would be on private land following the land exchange. Following transfer of the Federal lands into private ownership, Simplot would be responsible for determining final engineering and design details of the gypsum stack expansions and the cooling ponds and permitting these facilities in accordance with other Federal and State requirements.
S-022	Water resources	Volume 3, Appendix I, General: Data used in analyses for this water resource technical report must be no more than 5 years old. Please redo appropriately.	The data presented in Appendix H represent the best available existing information at the time of preparation of this EIS.
S-022	Water resources	Volume 3, Appendix I, General: All figures presented in this report must be referenced to the document from which they came (ex. -CERCLA, EPA, IDEQ, etc.)	Added references/citations to all figures where information came from other sources. Those figures that do not have references are generally figures associated with the predictive modeling and other information that is part of the water resource assessment conducted by Formation.
S-022	Water resources	Volume 3, Appendix I, General: This technical report focused on evaluation of impacts to water resources that would occur from the Proposed Action/Alternative A. These analyses and evaluations must be redone to address the impacts from Alternative B, which will be significantly different from the	As indicated in Appendix H, Figure 5-5, groundwater flow and the movement of any contaminants from the gypsum stacks would generally be the same for the Proposed Action/Alternative A and

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		impacts from Alternative A. Unless these evaluations for Alternative B are completed and added to this report, then the current report is fully inadequate and incomplete.	Alternative B (see groundwater flow pathways). As a result, potential impacts on water resources would generally be the same for Alternative B as presented in the Water Assessment Report. Also, refer to Section 3.17.14.3 for the analysis of impacts on water resources under Alternative B.
S-022	Water resources	Volume 3, Appendix I, General: Regardless of regulatory requirements for reporting from EPA or IDEQ or IDEQ regulatory agreement documents or EMF reporting requirements, this analysis must investigate, evaluate, and analyze impacts to water resources from ALL COCs associated with the Simplot OU. Specifically, arsenic and radionuclides are ignored completely in this report. This is unacceptable and this report must be redone.	Text has been added to Section 3.17 regarding other contaminants, Total Maximum Daily Loads, radionuclides, and other contaminants. The water resource assessment focuses on phosphorous and arsenic because they currently exceed regulatory limits, are the focus of remedial actions, and are the constituents of greatest concern for environmental consequences associated with the reasonably foreseeable actions. While the water assessment focuses on arsenic and phosphorus, it does include information on other contaminants. For example, refer to Table 5-7 and Table 5-8 in Appendix H for additional information on modeled contribution to concentrations of other contaminants of concern from the reasonably foreseeable actions.
S-022	Water resources	Section 2.2: The geology and hydrogeology section is severely deficient and inadequate. Please add surficial soil type maps, the most recent surficial geologic maps (ISU or USGS) and cross-sections prepared by professional geologists. In addition,	The EIS and the water resource assessment includes an adequate level of information to describe the affected environment and the potential impacts

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		geologic history text must also be included. Finally, structural geologic analyses (recent ones such as Anders, et.al.) that integrate Snake River Plain structural geology, paleomagnetism, caldera boundary conditions, and associated faulting must be included in this document.	that could result from the land exchange. The EIS also includes substantial information on the reasonably foreseeable actions and associated cumulative impacts that could occur following the scope of the decision (i.e., the land exchange) covered in this EIS.
S-022	Water resources	Section 2.2, Page I-7: Using August 2003 water level data for this evaluation of current conditions and potential impacts in the upper and lower groundwater zones is unacceptable. Use data less than 5 years old. Amend this section to use up to date information.	The August 2003 water level data are used to demonstrate groundwater levels prior to installation and operation of the groundwater extraction system. The data set is the last synoptic monitoring event available that can be used to map the static (non-pumping) potentiometric surface and was used to delineate groundwater flow paths and designate target capture zones. Extraction wells began operating in 2004 and have operated nearly continuously since. Synoptic water level data are collected every quarter and potentiometric maps are compiled that show the influence of the extraction system. The potentiometric surfaces have not changed since 2003.
S-022	Water resources	Section 2.3, Page I-9, 1st Paragraph: There is no data that support the first statement in this section. If there are, then those data must be referenced. The IDEQ 2004 report made no such declaration.	The information presented in Section 2.3 of the Water Resource Assessment presents the best available existing information on groundwater and surface water interactions. To date, the BLM has not identified or received other

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			references/data that would contradict the information presented in this report.
S-022	Water resources	Section 2.4, Page I-13, 1st Paragraph: None of the declaratory statements are referenced to data and published reports. Either amend this section to include the necessary references to make this scientifically valid or remove from the document.	Added citations for information in Section 2.5 and Figure 2-9.
S-022	Water resources	Section 2.5, Page I-14, Figure 2.9: Using 13-year old data for arsenic concentrations in groundwater for a 2019 assessment report on impacts to water resources is unacceptable. Use current data or delete this figure.	The arsenic concentration data are from the first quarter 2007 sampling event and the figure was used to demonstrate how the distribution of constituents is influenced by the hydrogeology and hydraulic gradients and was part of the conceptual model for groundwater as presented in the *Groundwater Extraction and Monitoring System Remedial Design Report* (Formation 2010). This is an important aspect of the conceptual site model that is still valid today. An updated version of Figure 2.9 was added that includes the latest arsenic data.
S-022	Water resources	Section 3.2, Page I-18, Section: Even though the IDEQ TMDL, the 2008 VCO/CA, and the 2010 IRODA fail to address or mention arsenic in surface water resulting from the Simplot OU, this DEIS MUST address arsenic in surface water because it is a known contaminant from Simplot operations and contamination plumes. This DEIS is not legally tied or related to any of the IDEQ or EPA regulatory actions therefore, this DEIS must evaluate all known factors that will impact water resources from Simplot waste.	Section 3.17.2.2 of the Draft EIS states, “Arsenic and nitrate currently exceed Idaho and Federal primary drinking water standards, and sulfate exceeds Idaho and Federal secondary groundwater drinking water standards at the site.” The following text related to the 2019 Quarter 2 sampling event has been added in Section 3.17.2.2: *Arsenic concentrations at Batiste Spring (0.012 mg/L) slightly exceeded the MCL (0.10 mg/L), but were*

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			below the MCL at other sampled locations.
S-022	Water resources	Appendix I, Water Resource Assessment: Section 3.2, Page I-18, Section: The TMDP history and nutrient target concentrations need to be updated to reflect the most recent version of the Portneuf River TMDL. The document was revised and updated in 2010 and requires more stringent total phosphorus concentrations in the main stem of the Portneuf River.	In Section 3.17.2.2 (*Surface Water and Groundwater Quality*), the following text has been added: *The Portneuf River Watershed Advisory Group proposed total phosphorus concentration targets of 0.125 mg/L during the high-flow months of March through June and 0.07 mg/L during the low-flow months of July through February (IDEQ 2010).*
S-022	Water resources	Section 3.3.4, I-27, 2nd paragraph: All arsenic data for surface water should be reported in this document, regardless of whether it was above standards or not.	As part of the Comprehensive Environmental Response, Compensation, and Liability Act monitoring program, surface water samples are collected quarterly from the springs that discharge to the Portneuf River (Batiste and Batiste Road) but not from the Portneuf River itself. Arsenic data from the springs are included in the document. Monthly sampling of the Portneuf River is performed by IDEQ, but the samples are not analyzed for metals/metalloids. The most recent arsenic data for surface water that we are aware of is from the Remedial Investigation Report for the Eastern Michaud Flats Site (Bechtel 1996) that indicate the highest arsenic concentration measured in the river downstream of the EMF groundwater input was 0.006 milligram per liter (mg/L): significantly below the Idaho

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			chronic criterion for the protection of aquatic life (IDAPA 58.01.02 Section 210.01.a) of 0.150 mg/L. Mass flux of arsenic to the river from the EMF Site would have reduced since that time due to remedial actions at Simplot and cessation of operations at the FMC facility.
S-022	Water resources	Section 4.0, Page I-37, Section: Predictive modeling did not evaluate Alternative B impacts, which are significantly different from Alternative A/Proposed Action. Additional modeling and text are required in order to complete the full and true assessment of environmental impacts from this land exchange. Please do the work and report it accordingly.	As indicated in Appendix H, Figure 5-5, groundwater flow and the movement of any contaminants from the gypsum stacks would generally be the same for the Proposed Action/Alternative A and Alternative B (see groundwater flow pathways). As a result, potential impacts on water resources would generally be the same. Refer to Section 3.17.14.3 for the analysis of impacts on water resources under Alternative B.
S-022	Water resources	Section: 5.0, Page I-49, Section: Predictive modeling did not evaluate Alternative B impacts, which are significantly different from Alternative A/Proposed Action. Additional modeling and text are required in order to complete the full and true assessment of environmental impacts from this land exchange. Please amend this section and include predictive modeling results for Alternative B impacts.	As indicated in Appendix H, Figure 5-5, groundwater flow and the movement of any contaminants from the gypsum stacks would generally be the same for the Proposed Action/Alternative A and Alternative B (see groundwater flow pathways). As a result, potential impacts on water resources would generally be the same. Refer to Section 3.17.14.3 for the analysis of impacts on water resources under Alternative B.

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S-022	Water resources	Section 5.0, Page I-56 forward: The remainder of Section 5.0 from this point forward provides meaningless information that does not address either Alternative A or B nor does the section address arsenic impacts in the Portneuf River. Remove from the document.	The information presented in Section 5.0 of the Water Assessment Report provides a quantitative assessment of potential cumulative impacts on groundwater (i.e., arsenic and phosphorus) resulting from the reasonably foreseeable actions that would be constructed on the Federal lands following the land exchange.
S-026	Water resources	We recommend that the EIS include additional information on phosphorous concentrations upstream and downstream of where site affected groundwater enters the Portneuf River. To address this recommendation, we recommend including or summarizing data on phosphorous concentrations in the Portneuf River from Formation Environmental's "2018 Annual Report Groundwater/Surface Water Remedy Don Plant Simplot Operable Unit Eastern Michaud Flats Superfund Site Pocatello, Idaho" (2018 Annual Report) in the EIS. We recommend including Figure 9-4 and/or Figure 9-8 from the 2018 Annual Report - which is cited in Appendix I of the DEIS - as this information would improve the description of the affected environment for water resources.	The Draft EIS discusses phosphorus concentrations and trends in Appendix H (*Water Resource Technical Report*). The following text related to the 2019 Quarter 2 sampling event has been added in Section 3.17.2.2: *Arsenic concentrations at Batiste Spring (0.012 mg/L) slightly exceeded the MCL (0.10 mg/L), but were below the MCL at other sampled locations.* Arsenic concentrations are not routinely measured in the Portneuf River. Figure 3-10 in Appendix H of the EIS provides a similar illustration of phosphorus concentrations at Siphon Road as Figure 9-4 of the 2018 Annual Report, but over a broader time period.
S-026	Water resources	Similarly, we recommend the EIS summarize information on potential sources of phosphorus in the Portneuf River from the 2010 Portneuf River Total Maximum Daily Load Revision and Addendum. We appreciate that the DEIS references the 2018 Annual Report and 2010 TMDL Revision and Addendum documents. Given the relevance to the affected environment for water resources, we believe that directly including additional detailed information in the EIS from these	Added the following text to Section 3.17.2.2 (*Surface Water and Groundwater Quality*): *Arsenic concentrations at Batiste Spring (0.012 mg/L) slightly exceeded the MCL (0.10 mg/L), but were below the MCL at other sampled locations. Phosphorus concentrations ranged from 0.017 mg/L to 2.32 mg/L. Although there is not*

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		documents would be beneficial for decision makers and the public and would improve the context for the cumulative effect's analysis on water resources.	*currently a Risk-based Concentration for phosphorus, the 2008 Voluntary Consent Order and Compliance Agreement established a water quality target for total phosphorus in the Lower Portneuf River of 0.075 mg/L at Siphon Road.*
S-026	Water resources	As written, the cumulative effects analysis for water resources focuses on the fact that " ...predicted changes in concentrations of phosphorous and arsenic are small... " (p3-85). We agree that the predicted changes as a result of reasonably foreseeable actions under the Action Alternatives (with the land exchange) would be small relative to the baseline. This evaluation is consistent with the intensity component of disclosing environmental effects in an EIS. We recommend that the context component of disclosing environmental effects, however, could be improved with the above information on sources of phosphorous to the Portneuf River as then there would be more information in the EIS relevant to Table 3-16's "Baseline" concentrations of phosphorous.	In Section 3.17.2.2 (*Surface Water and Groundwater Quality*), the following text was added: *Arsenic concentrations at Batiste Spring (0.012 mg/L) slightly exceeded the MCL (0.10 mg/L), but were below the MCL at other sampled locations. Phosphorus concentrations ranged from 0.017 mg/L to 2.32 mg/L. Although there is not currently a Risk-based Concentration for phosphorus, the 2008 Voluntary Consent Order and Compliance Agreement established a water quality target for total phosphorus in the Lower Portneuf River of 0.075 mg/L at Siphon Road.*
S-026	Water resources	We further recommend that the EIS disclose that, while the incremental contribution attributable to the reasonably foreseeable actions under the Action Alternatives is small, adding to the phosphorous load in the Portneuf River at Siphon Road is an adverse impact. Additional phosphorous loading to the Portneuf River is an adverse impact because the DEIS's " ... predicted total concentrations do not decrease to the required 0.075 mg/L for any year modeled... " (p. 3-85). Failing to decrease total phosphorus concentrations to the regulatory target is a concern because the Portneuf River does not currently meet its designated uses.	Added the following text to Section 3.17.4.1 (*Water Resources, Cumulative Effects, Proposed Action*): *As indicated in Table 3-16, the predicted total concentrations do not decrease to the required 0.075 mg/L for any year modeled, which constitutes an adverse effect.* The statistical metric for the EIS modeling differs from the modeling calculations used to determine compliance with the

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			2008 Voluntary Consent Order and Compliance Agreement. The EIS modeling is intended to provide an analysis of potential impacts based on existing information. Compliance with target phosphorus concentrations required by the 2008 Voluntary Consent Order and Compliance Agreement will be evaluated and determined by regulatory agencies through a separate process, independent from this EIS.
S-026	Water resources	Because the Portneuf River does not currently meet designated uses, concentrations of phosphorous in the Portneuf River are above regulatory targets, are predicted in the DEIS to remain above regulatory targets for the foreseeable future and are going to be increased by reasonably foreseeable future actions, we recommend that the EIS include information on how phosphorous concerns in the Portneuf River will be addressed in the future. For example, we recommend including additional information on related regulatory agency activities. Consider disclosing in the EIS that evaluation of data related to water quality and Clean Water Act requirements by EPA and IDEQ is ongoing and that additional response actions may be found necessary, consistent with the EPA's 2010 Interim Amendment to the Record of Decision for the EMF Superfund Site, Simplot Plant Operable Unit, Pocatello, Idaho.	Added the following text to Section 3.17.4.1 (*Water Resources, Cumulative Effects, Proposed Action*): *Phosphorus concentrations in the Portneuf River will continue to be assessed by EPA and IDEQ and will be considered during subsequent permitting of the reasonably foreseeable actions. In addition, evaluation of data by EPA and IDEQ related to water quality and Clean Water Act requirements is ongoing and additional response actions may be found necessary, consistent with the EPA's 2010 Interim Amendment to the Record of Decision for the EMF Superfund Site (EPA 2010)*.
S-026	Water resources	We recommend the EIS include additional information on the importance of current and potential future waste gypsum pile liner integrity to protect underlying groundwater quality. Relatively minor liner failures (from installation imperfections and/or geotechnical stress) can be difficult to detect and may have long-term consequences for groundwater quality. The	Added text to the end of Section 3.17.3.1 (*Water Resources, Cumulative Effects, Proposed Action*) describing potential effects on water resources if a liner failure were to occur.

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		DEIS has a section on geotechnical stability which considers catastrophic slope failure and impacts to the land surface, although our review finds that it does not sufficiently address the topic of landfill liner integrity to protect underlying groundwater quality.	
S-026	Water resources	We recommend the EIS discuss the risk of potential liner failures adversely affecting groundwater quality, how they might be detected, and possible remedial actions (e.g., groundwater extraction and treatment of contaminated groundwater) in the event of a liner failure. We also recommend discussion of whether and how the source reference for the conceptual site model's maximum leakage rate (Ardaman and Associates (2009), pg. I-41) accounts for the potential for minor liner failure.	Added text to the end of Section 3.17.3.1 (*Water Resources, Cumulative Effects, Proposed Action*) describing potential effects on water resources if a liner failure were to occur. In the water resource modeling and assessment, the leakage is assumed to be constant during the period of active operation based on the area of the liner for each compartment. Refer to Section 5.3 in Appendix H (*Water Resource Assessment*) for additional information on the maximum leakage rate used in the water resource assessment.
S-026	Water resources	We recommend changing the reference to SWP-4 as being used to supply water for the plant, since it can no longer be used for that purpose. We also recommend the EIS summarize available information and/or provide an explanation for why SWP-4 can no longer be used to supply water for the plant. For example, Section 2.1.3.1.7 indicates that three onsite wells are being used to supply water for the Simplot Don Plant, SWP-4 (aka #4-E0007384), SWP-5 (#5-A0007743) and SWP-7 (#7-E0007382). We understand that only two of these wells have been used for plant water supply since the first quarter of 2014, because elevated concentrations of arsenic were detected at SWP-4. As SWP-4 withdrew groundwater to supply clean water to the plant, it apparently drew contaminated groundwater from the	Specific references to "three" wells and well tag numbers have been deleted from Section 2.1.3.1.7 (*Water Use*), which now states more generally that fresh water is being supplied by onsite wells. SWP-4 can still be used to supply water to the plant. Concentrations of constituents such as arsenic in samples from SWP-4 were low but elevated above background (and the Maximum Contaminant Level [MCL]) when the well was previously in use but dropped to near background when the Phase 2 groundwater extraction

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		overlying or nearby plume and ultimately became unusable for water supply due to the elevated arsenic concentrations. The Simplot Plant and the surrounding area is part of a Superfund Site, in part, because of contaminated groundwater. There are plumes of groundwater under and around the plant contaminated with arsenic, phophorous and nitrate, among other contaminants of concern. There is an extraction well network which has been installed to withdraw some of the contaminated groundwater before it reaches the Portneuf River. The contaminated groundwater withdrawn by the extraction wells is then mixed with clean water from production wells for use as production make-up water. The contaminated groundwater extraction wells and the water supply wells (SWP-5 and SWP-7) are located approximately five hundred feet from each another but withdraw groundwater from different portions of the deep zone. The degree of hydraulic separation, and long-term impacts of extraction from the supply wells, is an area of uncertainty. The water supply wells typically withdraw between 1,447 gallons per minute and 2,643 gallons per minute, whereas the contaminated extraction well network withdraws about 750 gallons per minute. These wells are listed by the Idaho Department of Environmental Quality, Drinking Water Branch, as part of water supply system number ID6390023. They are also listed in the EPA Safe Drinking Water Information System as a Non-Transient Non Community Water System. As the Simplot Plant continues to operate, we are concerned about the potential for groundwater quality impacts to SWP-5 and SWP-7. If parts of nearby plumes moved to the depth of SWP-5 and SWP-7 well screens, site remediation would become more difficult. We recommend the EIS summarize available information and discuss the risk to SWP-5	wells began operating in 2008 (but still slightly above the MCL). Subsequently, Simplot re-piped the system such that water from SWP-4 no longer serves the potable system. Water quality from this well is suitable for use in the facility. In addition to the effect of the plume capture by groundwater extraction system, the data presented in Section 3.3.4 of the Water Resource Report demonstrate that the plume of affected groundwater from the gypsum stack is declining in magnitude and extent due to the effects of gypsum stack lining. This effect is expected to continue and result in elimination of the groundwater-affected stack seepage. Monitoring data continue to demonstrate that an upward hydraulic gradient exists in the zone above the pumping intervals of SWP-5 and SWP-7 while the wells are in operation and that affected groundwater remains above this zone due to this gradient. Groundwater samples from SWP-5 and SWP-7 continue to have constituent concentrations that are at background. Based on these lines of evidence, Simplot states that there is essentially no potential for affected groundwater to migrate to the depth of the production

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		and SWP-7 to aid in understanding the complexity of the project by agency decision makers and the public.	intervals of SWP-5 and SWP-7 under any operation scenario. In follow-up communications, the EPA has indicated that based on information reviewed by the agency to date, it does not agree that there is "essentially no potential" for contaminated groundwater to migrate to SWP-5 and SWP-7 based on elevated arsenic found in SWP-4 after years of use, which exists in the same hydrologic setting. Further investigation and resolution of this issue is beyond the scope of this EIS and the BLM's regulatory authority.